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15M44

Preliminary Economic Assessment
Três Estradas Phosphate Project

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PREPARED FOR:
Aguia Resources

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COMMON UNIT, STANDARDS AND ABBREVIATIONS

°	Degree
°C	Celsius
cc	Cubic centimeter
d/y	Days per year
g, G	Gram
ha	Hectares
kg	Kilogram
km	Kilometer
km^2	Square kilometers
Ktpy	Kilo tonnes per year
ktonnes	Kilo tonnes
kWh	Kilowatt hour
m	Meters
M	Million
mm	Millimeters
Mt	Million tonnes
Mtpy	Million tonnes per year
t	Metric tonne (1000 kg)
t/y	Metric tonnes per year
t/h	Metric tonnes per hour
t/m^3	Tonnes per cubic meter

1 EXECUTIVE SUMMARY

Aguia Resources Ltd's Três Estradas project site, and its satellite site, Joca Tavares, are on phosphate deposits located nearby to each other, in the southern region of the State of Rio Grande do Sul, Brazil. In February, 2016, the Millcreek Mining Group (Millcreek) was engaged to perform an updated preliminary economic assessment (PEA) of the project.

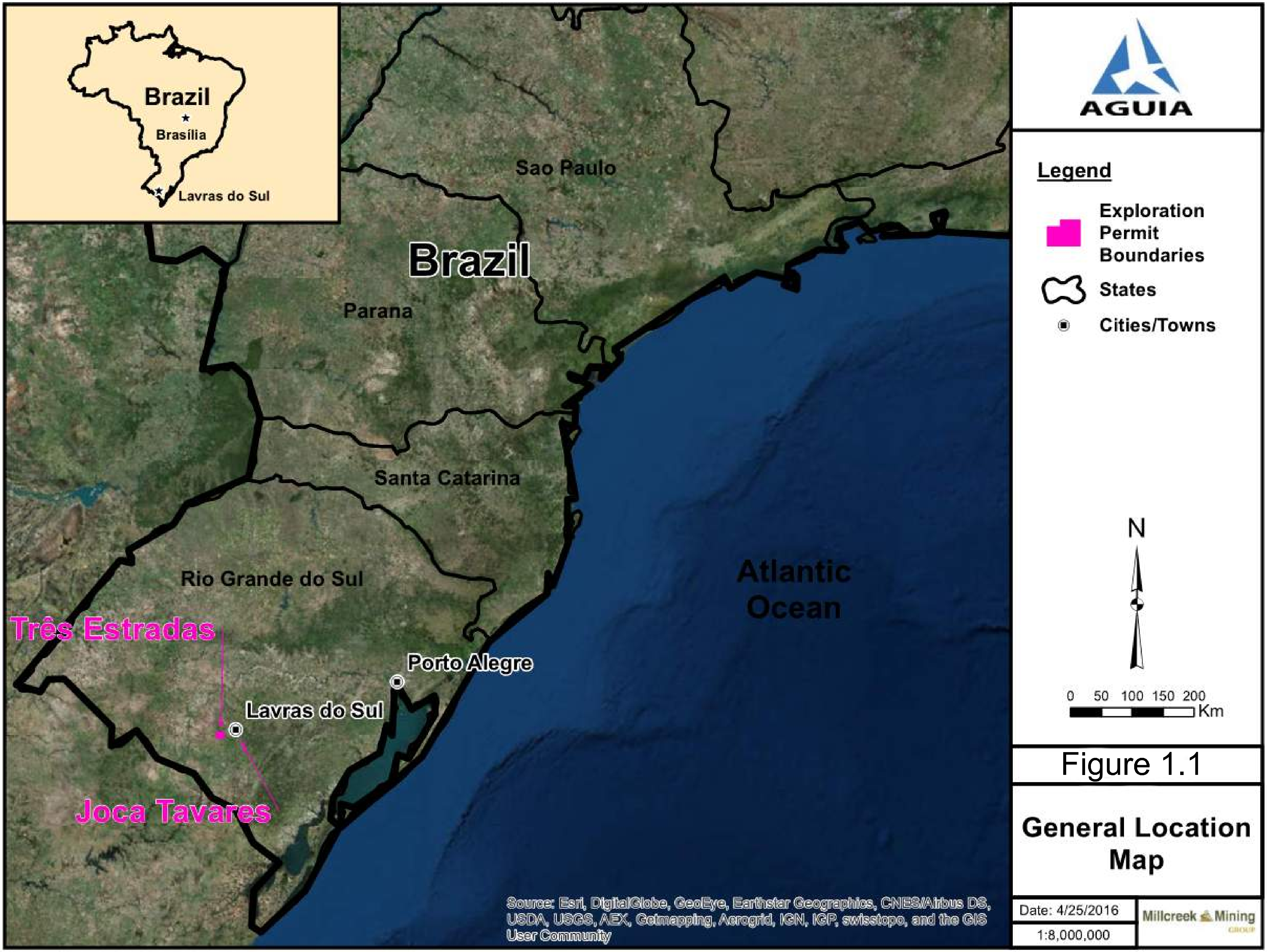
Aguia Resources Ltd. is an exploration and development company focused on Brazilian phosphate projects to supply the Brazilian agriculture sector. Aguia is listed on the Australian Stock Exchange (ASE) under the symbol AGR and has offices in Sydney, Australia and Belo Horizonte, Brazil. The company currently controls over 1,110 km^2 of land in the states of Rio Grande do Sul and Paraiba containing phosphate mineralization through exploration permits it has acquired from the Brazilian National Department of Mineral Production (DNPM). The company seeks to develop its holdings of phosphate deposits into viable mining operations providing phosphate and agricultural limestone to Brazil's agriculture industry.

Millcreek has prepared this PEA on behalf of Aguia Resources Ltd (Aguia) in accordance with the current requirements of Australasian Code for Reporting of Exploration Results, Mineral Resources, and Ore Reserves ('the JORC Code'). The JORC code is a professional code of practice that sets the minimum standards to be followed for public reporting of minerals exploration results, mineral resources, and ore reserves. In accordance with accepted standards and best-practises for certification of resources, Millcreek personnel performed a personal inspection of the project sites from March 17, 2016 through March 19, 2016. Millcreek's representatives included Mr. Steven Kerr (C.P.G.-10352) and Mr. Alister Horn (MMSAQP-01369), who are considered Competent Persons under the JORC code.

1.10 LOCATION AND TENURE

The Três Estradas Project is located in the municipality of Lavras do Sul, approximately 320 kilometers (km) southwest of Porto Alegre, the capital city of Rio Grande do Sul in southern Brazil and 1,790km south of Brasilia (Figure 1.1). The mining operation will consist of mining phosphate from the Três Estradas deposit as well as mining phosphate from the Joca Tavares deposit located southeast of Três Estradas. Phosphate material from both deposits will be milled and processed at Três Estradas.

Aguia holds 100% interest in three exploration permits issued by the DNPM for Tres Estradas and a fourth exploration permit for Joca Tavares. The four exploration permits combined, cover a total area of 2,881.57ha. Exploration permits are granted for up to a three-year period, renewable for a further period at the decision of DNPM, under the objective conditions stipulated in the mining code.


Brazil
Brasília
Lavras do Sul
Sao Paulo
Brazil
Parana
Santa Catarina
Rio Grande do Sul
Três Estradas
Joca Tavares
Porto Alegre
Lavras do Sul
Atlantic Ocean
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
AGUIA
Legend
Exploration Permit Boundaries
States
Cities/Towns
N
0 50 100 150 200
Km
Figure 1.1
General Location Map
Date: 4/25/2016
1:8,000,000
Millcreek Mining

Mining concessions can be applied for upon the presentation of: (i) a mining plan within one (1) year, counted from the approval of the final exploration report by DNPM; and (ii) installation license issue by environmental license. The mining plan must include an economic feasibility analysis, and the company must demonstrate to the DNPM that it has the financial capability to carry out the forecasted plan. The application for a concession must also include a Plan for Recovery of Degraded Areas (PRAD) covering water treatment, soil erosion, air quality control, re-vegetation or reforestation and site reclamation. Once the legal and regulatory requirements are met, a mining concession is granted. The terms of the concession will include conditions concerning mitigating environmental impact, site safety, construction codes, waste disposal and site reclamation.

The Três Estradas project is located approximately 30km southwest of Lavras do Sul, located in the south-central portion of the state of Rio Grande do Sul. The project area is located approximately 320km from Porto Alegre, the capital and largest city of Rio Grande do Sul. Lavras do Sul is a community of 8,300 inhabitants. The town has a well-developed infrastructure, availability of unskilled and semi-skilled mining personnel and access to non-specialized supplies. Aguia bases its field operations in Lavras do Sul with an office complex and core storage facility.

Joca Tavares is located 23km south-southeast of Lavras do Sul. By vehicle the overall route to Joca Tavares from Lavras do Sul is 49km and the overall route between Três Estradas and Joca Tavares is 84km (Figure 1.2).

The region has a humid subtropical climate. The landscape surrounding Lavras do Sul and the two phosphate deposits can be characterized as low, gentile sloping hills and intervening valleys covered with a mix of Pampas grass lands, shrubs, and small to medium height trees. Primary land use is agriculture, supporting rice farming, cattle and sheep.

1.11 GEOLOGY

The Três Estradas deposit consists of an elongated meta-carbonatite intrusion with a strike of 50 to 60 degrees, the linear-type carbonatite, plunges steeply from 70º to vertical (90º) towards the northwest. The surface expression of the intrusion is approximately 2.5km along strike with a width of approximately 300m. The Late Archean to Early Proterozoic intrusion is intensely recrystallized and metamorphosed to amphibolite assemblages.

The Joca Tavares carbonatite has intruded through sediments belonging to the Arroio-Marmeleiro Formation. The carbonatite along with Kimberlite breccias have intruded along a 40° - 50° trending lineament. The carbonatite is developed on the northeast end of the magnetic anomaly with the Kimberlite breccias extending southwest from the carbonatite. The main carbonatite body has an ovate surface expression of approximately 350m in the east-west direction by 250m in the north-direction. Carbonatitic breccia forms a rim along the west and south sides of the main carbonatite body.

Phosphate mineralization, occurring as the mineral apatite ($Ca_5(PO_4)_3(F,Cl,OH)$) is the primary mineralization of economic interest at Três Estradas and Joca Tavares. Apatite is the only phosphate-bearing mineral occurring in the carbonatites. At Três Estradas phosphate mineralization occurs in both fresh and weathered meta-carbonatite and amphibolite. It also occurs as secondary mineralization in the saprolite directly overlying the meta-carbonatite and amphibolite. At Joca Tavares apatite is found disseminated throughout the carbonatite and in saprolite directly above the carbonatite.

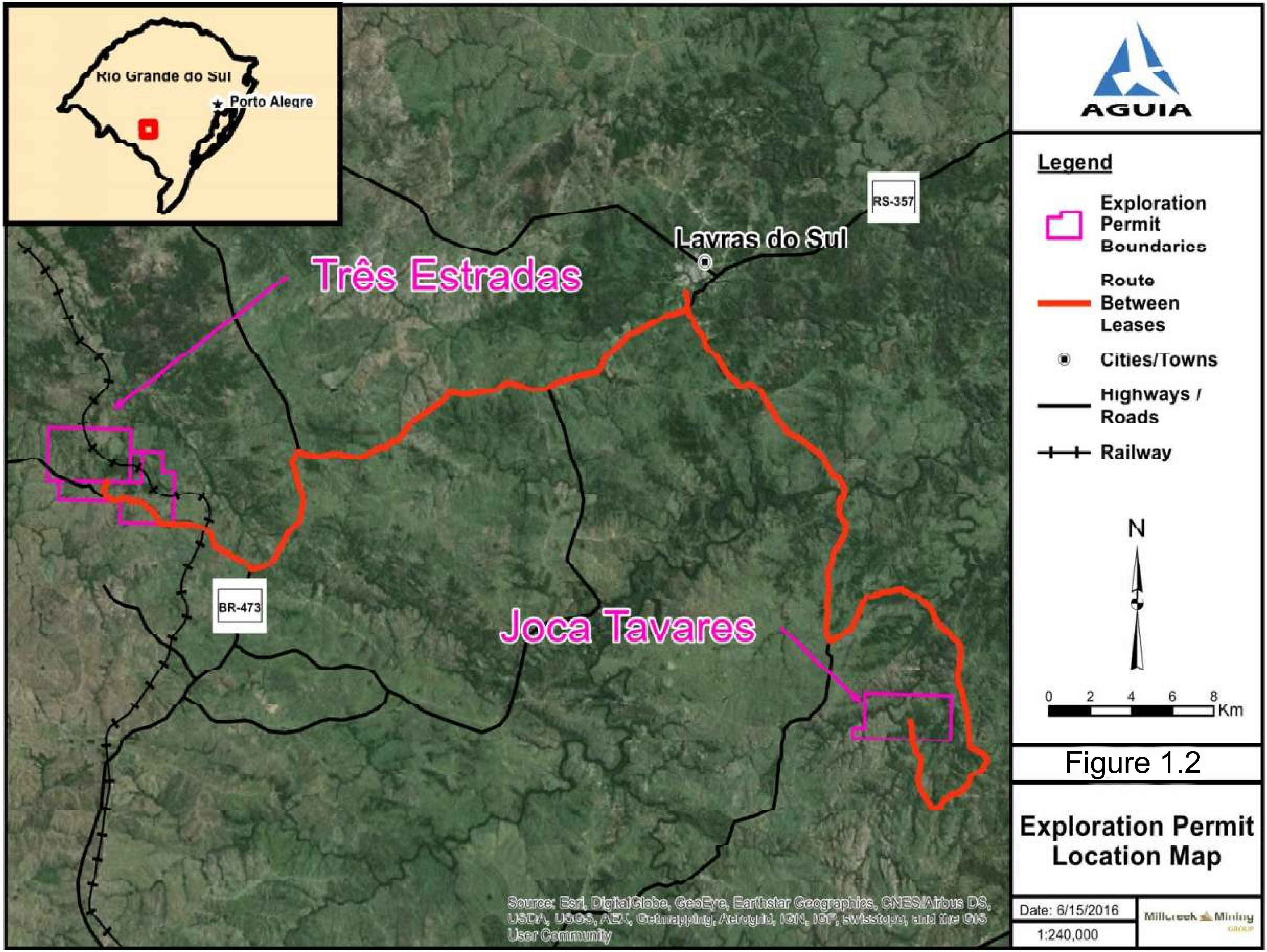


Figure 1.2

Exploration Permit Location Map

1.12 EXPLORATION

Aguia has been diligent following a systematic approach in its exploration programs for Três Estradas and Joca Tavares. Aguia has undertaken detailed geologic mapping, topographic surveys, remote sensing, soil and rock geochemical surveys, and geophysical surveys. Aguia has completed four drilling campaigns on the Três Estradas area between 2011 and 2015. Drilling has included 78 core holes (10,801.45m), 154 reverse circulation (RC) holes (3,304.0m), and 487 auger holes (2,481.65m). At Joca Tavares, Aguia completed 89 auger holes (359.65m) followed by a 40-hole core drilling program (2,305.90m) in late 2015. Aguia has followed standard practices in their core, RC, and auger drilling programs. They have followed a set of standard procedures in collecting cuttings and core samples, logging, and data acquisition for the project.

Aguia has followed standard practices in their geochemical surveys, core, RC, and auger drilling programs. They have followed a set of standard procedures in collecting cuttings and core samples, logging, and data acquisition for the project. Their procedures are well documented and meet generally recognized industry standards and practices. From the start of exploration activities up through October, 2012, ALS Laboratory in Vespasiano, MG was the primary facility used for analysis of soil, rock and drilling samples. After October, 2012 all subsequent samples from Três Estradas and Joca Tavares were sent to SGS Geosol, also in Vespasiano, as the primary analytical laboratory. X-Ray Fluorescence (XRF) for the major oxides has been primary analytical method employed for analytical work, supplemented with ion-coupled plasma (ICP) spectrometry, mineralogical, and beneficiation tests.

For quality assurance and quality control (QA/QC) of analyses Aguia uses a combination of reference samples, blanks, duplicate samples, and umpire check assays. Reference, blanks and duplicate samples were inserted into the stream of drill samples such that one in 20 samples was a reference sample, one in every 30 samples was a blank sample, and one in every 30 samples was a duplicate sample. Care has been taken in the sequencing to distribute references and blanks so that reference and blanks didn't immediately follow each other, though a coarse-grained blank does immediately precede a fine-grained blank to track carryover contamination.

During our site visit, Millcreek performed a detailed review of randomly selected core holes for Três Estradas and Joca Tavares. Cores were directly compared to the original logs prepared by Aguia geologists to verify intervals and measurements, lithologic, and alteration descriptions. This was followed by a series verifications to the databases provided to Millcreek. Millcreek reviewed assay certificates to the databases for more than 12% of the drill holes representing 11% of the assays in the database. Our review of QA/QC procedures and results show a strong continuity in the dataset without any significant anomalies.

Millcreek has reviewed the methodology and assumptions used by Aguia and has completed a detailed audit of the geologic model and resource estimation. For Três Estradas, the resource database used for mineral resource evaluation includes 78 core holes and 154 RC holes as summarized in Table 1.1. Sampling information from auger holes are not considered in the model.

Table 1-1 Summary of Drilling Database

Drilling	Count	Cumulative Meters	Assay Intervals
Core Holes	78	10,801.45	9,361
RC Holes	154	3,304.00	3,304
Total	**232**	**14,105.45**	**12,665**

For Três Estradas, Aguia developed a geologic block model using GEMS^{TM} software. Modeling was constructed by developing a series of vertical sections spaced at 50-meter intervals and horizontal sections spaced at 10-meter intervals from the drilling data. Three-dimensional shells were developed by linking horizontal shells together with tie lines. Mineralization has an approximate strike length of 2,400m and extends to a depth of 370m below surface. Mineralized zones range in thickness from 5m to 100m. The outer mineralized envelopes were modeled into wireframe solids using a 3.00% P_2O_5 cut-off grade.

The model recognizes five mineralized, lithologic domains and three non-mineralized domains as listed in Table 1.2.

Table 1-2 Model Lithologic Domains

Domains	Block Code	Mineralized	Description
AMPSAP	210	Yes	Saprolite of Amphibolite with apatite
CBTSAP	110	Yes	Saprolite of Carbonatite
WMCBT	120	Yes	Weathered Carbonatite
MCBT	100	Yes	Meta-Carbonatite
MAMP	200	Yes	Mineralized Amphibolite
W-SAP	3	No	Saprolite Waste
W-WEATH	2	No	Weathered Waste Rocks
W-ROCK	1	No	Waste Rock

Grade estimations were made using ordinary kriging interpolation for the domains MCBT. WMCBT, and MAMP. Inverse Distancing Squared (ID2) was used for grade estimations of the two saprolite domains, CBTSAP and AMPSAP. All estimations are based on 1.0 m composites on a homogeneous block model with unitary dimensions of 25m N, by 5m E, and 10 m in elevation rotated 40^o in a clock-wise direction. All estimations are based on a homogeneous block model. The variography studies were performed using the composites in the meta-carbonatite (MCBT). Variography shows a preference in orientation that is nearly coincidental to the strike and dip of the meta-carbonatite and the Cerro dos Cabritos Fault. The variograms were normalized before running the resource estimation.

For Joca Tavares, the resource database used for mineral resource evaluation considers 40 core holes. Sampling information from auger holes are not considered in the model. Aguia developed a geologic block model for Joca Tavares using GEMS^{TM} software. Modeling was done by developing a series of vertical sections spaced at 50-meter intervals from the drilling data. Three-dimensional shells were developed by linking the vertical sections together with tie lines. Mineralization has an approximate length of 350m on its east-west axis, 250m along the north-south axis, and to a depth of 60m below surface. Mineralized zones range in thickness from 5m to 55m. The outer mineralized envelopes were modeled into wireframe solids using a 3.00% P_2O_5 cut-off grade.

The model recognizes two mineralized, lithologic domains and two non-mineralized domains as listed in Table 1.3.

Table 1-3 Model Lithologic Domains

Domain	Block Code	Mineralized	Description
CBTSAP	110	Yes	Saprolite of Carbonatite
CBT	100	Yes	Weathered and Fresh Carbonatite
W-SAP	2	No	Saprolite Waste
W-ROCK	1	No	Waste Rock

Grade estimations were made using ordinary kriging interpolation for CBT and ID2 was used for grade estimation of the saprolite domain, CBTSAP. Grade estimation was completed using ordinary kriging interpolation for the CBT domain and ID2 was used for the CBTSAP domain. All estimations are based on 1.0 m composites on a homogeneous block model with unitary dimensions of 10m N, by 10m E, and 2.5 m in elevation Aguia has built the model using a minimum cut-off grade of 3.0% P_2O_5.

1.13 Mineral Resources

The estimated in-situ resource for Aguia’s Três Estradas geologic block model identifies 82.2Mt of material with an average grade of 4.02% P_2O_5 using a minimum cut-off of 3.0% P_2O_5. This is the in-place estimate without consideration for mining method, recovery, processing or economic constraints. Millcreek considers the phosphate mineralization at the Três Estradas phosphate deposit to be amenable to extraction using open-pit mining methods and to conventional milling techniques using column flotation. Millcreek has used the Lerchs-Grossman optimizing algorithm to evaluate the profitability of each resource block in the model based on its value. Optimization parameters are summarized in Table 1.4 and are derived from subsequent sections of this study that identify the mining, processing, and economic constraints.

Table 1-4 TE Pit Optimization Parameters

Parameters	Value
Mining Recovery/Mining Dilution	100 / 0
Process Recovery P_2O_5 Saprolite	80%
Process Recovery P_2O_5 Fresh	84%
Process Recovery Calcite Fresh	72%
Concentrate Grade Saprolite	31.0%
Concentrate Grade Fresh Rock	30.2%
Overall Pit Slope Angle Saprolite/Fresh Rock	35 / 50 Degrees
Mining Cost (US$/tonne Mined)	1.34
Process Cost (US$/tonne ROM)	4.79
G&A (US$/tonne of ROM)	0.82
Calcite Production Cost (US$/tonne of concentrate)	7.3
Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)	$250
Selling Price (US$/tonne of concentrate at Calcite)	$47
Royalties - Gross	2%
CFEM Tax - Gross	2%
Marketing Costs - Gross	2%
Exchange Rate (US$ to R$)	3.8

The optimized pit shell captures the resources estimated in the block model that have reasonable prospects for economic extraction. The pit optimization also considers the recovery of calcite as a byproduct to mining and processing of the meta-carbonatite. The pit optimization results are used solely for the purpose of testing the “reasonable prospects for economic extraction” and do not represent an attempt to estimate mineral reserves. Table 1.5 presents the Mineral Resource Statement for the Três Estradas phosphate deposit, audited and confirmed by Millcreek.

Table 1-5 Audited Mineral Resource Statement, Três Estradas Phosphate Deposit, Millcreek Mining Group, June 24, 2016

Resource Classification	Domain	Tonnage (T X 1,000)	P_2O_5 (%)	Cao (%)	P_2O_5 as Apatite (%)	CaO as Calcite (%)
Measured	WMCBT	204	5.23	35.58	12.38	63.68
	MCBT	541	4.11	34.44	9.75	61.63
Total Measured Resources		**745**	**4.42**	**34.75**	**10.47**	**62.19**
Indicated	AMSAP	460	6.30	11.27	14.93	20.17
	CBTSAP	1,741	10.49	16.88	24.85	30.21
	WMCBT	1,545	4.67	34.78	11.07	62.24
	MCBT	11,324	3.82	35.01	9.04	62.66
Total Indicated Resources		**15,070**	**4.75**	**32.17**	**11.25**	**57.57**
Inferred	AMSAP	521	6.09	11.08	14.42	19.82
	CBTSAP	1,470	11.65	17.72	27.60	31.71
	WMCBT	796	4.27	35.22	10.11	63.02
	MCBT	52,581	3.73	35.42	8.83	63.39
	MAMP	3,523	4.01	19.08	9.50	34.14
Total Inferred Resources		**58,891**	**3.97**	**33.78**	**9.41**	**60.46**

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All numbers have been rounded to reflect relative accuracy of the estimates. Mineral resources are reported within a conceptual pit shell at a cut-off grade of 3% P_2O_5. Optimization parameters are stated in Table 3.

The Audited Mineral Resource identifies 74.7Mt of material with an average grade of 4.13% P_2O_5 using a minimum cut-off of 3.0% P_2O_5.

The estimated in-situ resource for Joca Tavares identifies 2.9Mt of material with an average grade of 4.28% P_2O_5 using a minimum cut-off of 3.0% P_2O_5. This is the in-place estimate without consideration for mining method, recovery, processing or economic constraints. Millcreek considers the phosphate mineralization at the Joca Tavares phosphate deposit to be amenable to extraction using open-pit mining methods and to conventional milling techniques using column flotation. Millcreek has used the Lerchs-Grossman optimizing algorithm to evaluate the profitability of each resource block in the model based on its value. Optimization parameters are summarized in Table 1.6 and are derived from subsequent sections of this study that identify the mining, processing, and economic constraints.

Table 1-6 JT Pit Optimization Parameters

Parameters	Value
Mining Recovery/Mining Dilution	100 / 0
Process Recovery P_2O_5 Saprolite	80%
Process Recovery P_2O_5Fresh	84%
Concentrate Grade Saprolite	31.0%
Concentrate Grade Fresh Rock	30.2%
Overall Pit Slope Angle Saprolite/Fresh Rock	45 / 45 Degrees
Mining Cost (US$/tonne Mined)	1.34
Process Cost (US$/tonne ROM)	4.79
G&A (US$/tonne of ROM)	0.82
Hauling Cost of ROM to TE (85km @ R$ 0.20 / tkm)	$4.47
Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)	$250
Royalties - Gross	2%
CFEM Tax - Gross	2%
Marketing Costs - Gross	2%
Exchange Rate (US$ to R$)	3.8

The optimized pit shell captures the resources estimated in the block model that have reasonable prospects for economic extraction. Though mineral processing at Três Estradas will employ recovery of calcite as a byproduct, the carbonate fraction contained within the carbonatite at Joca Tavares is primarily dolomite. Recovery of dolomite and potential marketing of dolomite has not yet been investigated. Pit optimization for Joca Tavares only considers recovery of P_2O_5. The pit optimization results are used solely for the purpose of testing the “reasonable prospects for economic extraction” and do not represent an attempt to estimate mineral reserves. Table 1.7 presents the Mineral Resource Statement for the Joca Tavares phosphate deposit, audited and confirmed by Millcreek.

Table 1-7 Audited Mineral Resource Statement, Joca Tavares Phosphate Deposit, Millcreek Mining Group, June 24, 2016

Resource Classification	Domain	Tonnage (T X 1,000)	P_2O_5 (%)	P_2O_5 as Apatite (%)
Measured	CBTSAP	92	7.07	16.75
	CBT	823	3.64	8.61
Total Measured Resources		**915**	**3.98**	**9.43**
Indicated	CBTSAP	191	7.28	17.25
	CBT	1,315	3.87	9.18
Total Indicated Resources		**1,506**	**4.31**	**10.20**
Inferred	CBTSAP	147	7.96	18.86
	CBT	182	3.94	9.34
Total Inferred Resources		**329**	**5.74**	**13.59**

* Mineral resources are not mineral reserves. And have not demonstrated economic viability. All numbers have been rounded to reflect relative accuracy of the estimates. Mineral resources are reported within a conceptual pit shell at a cut-off grade of 3% P_2O_5. Optimization parameters are stated in Table 8.18

The Audited Mineral Resource identifies 2.75Mt of material with an average grade of 4.37% P_2O_5 using a minimum cut-off of 3.0% P_2O_5.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

1.14 MINING METHODS

Mine operations for the Três Estradas and Joca Tavares properties are planned as a conventional open pit, truck and shovel mining methods for the phosphate and waste material. The mining area (open pit, dump and plant) chosen and planned for the Project were defined primarily by optimized pit shells, the haulage distance to the plant, and proximity to “ex-pit" dumping.

Figure 1.3 shows the site plan for the Três Estradas facilities, pit, dump and dams.

Mining production levels are defined by production required to produce a nominal 500 Ktpy of phosphate concentrate. On a steady-state basis, the run of mine (ROM) production rate peaks at 4.5 Mtpy, to maintain the nominal phosphate concentrate production level.

This ROM mining rate accounts for a 95% recovery and a 5% dilution of the phosphate material from the pit.

For Três Estradas site, mining of the pit will be in two phases. These pit depths for Phase 1 are approximately 100 meters and the Phase 2 pit will attain an ultimate depth of 280 meters. The life of mine (LOM) strip ratio is 3.1:1 (waste to phosphate).

Joca Tavares is a much smaller resource, and the phosphate will be transported to Três Estradas, approximately 85 km. The maximum depth on the pit is 45 meters, and has a strip ratio of 0.4 to 1.

Table 1.8 summarizes the LOM mine production.

Figure 1-3, Três Estradas Site Plan

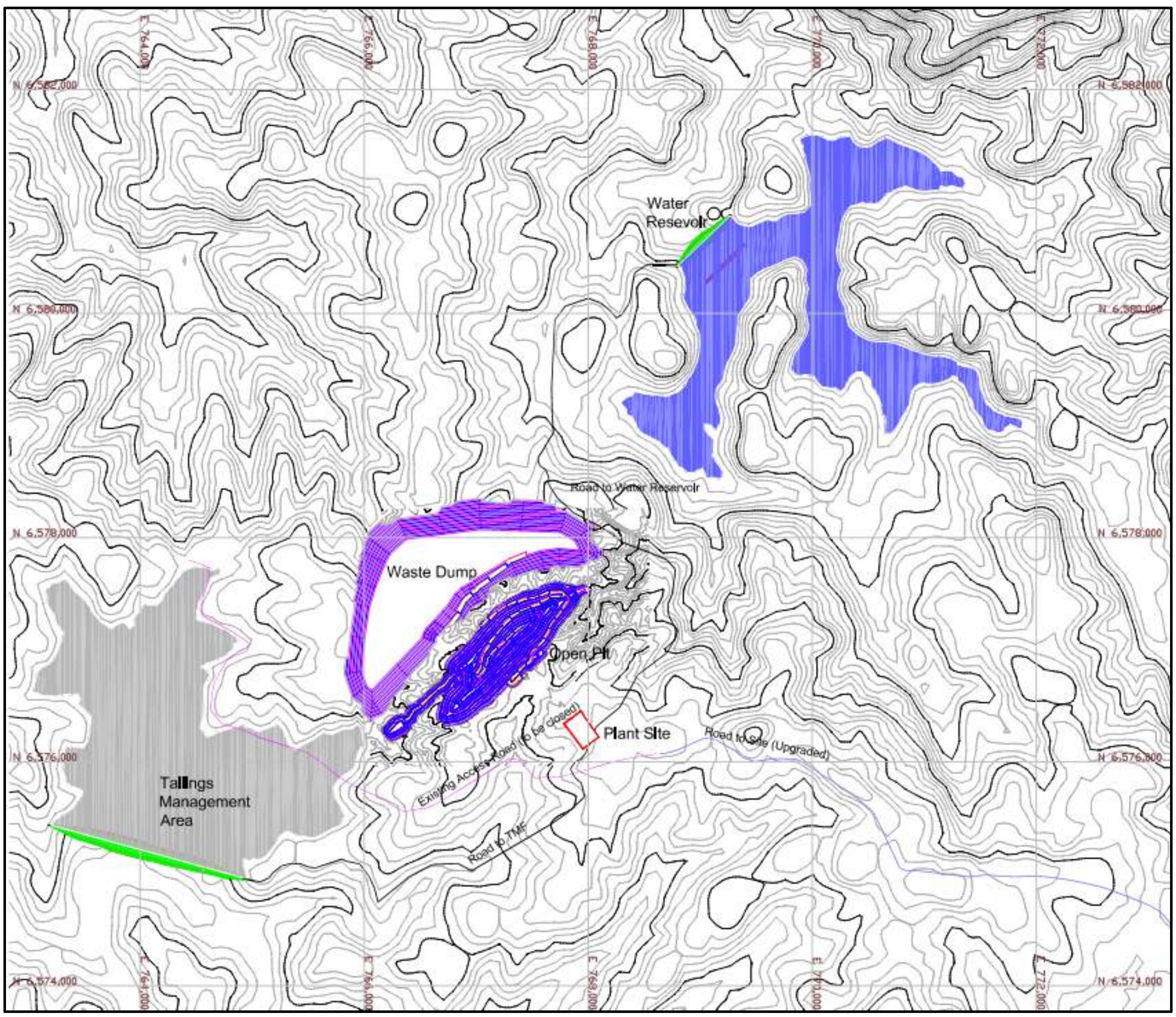


Table 1-8 ROM Mine Schedule

		Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6-10	Year 11-14	Total
Plant Feed	**ktonnes**	501	2,001	3,001	4,500	4,500	4,500	22,500	17,636	**59,138**
	P_2O_5 (%)	10.35	9.63	6.71	4.28	3.78	3.87	3.62%	3.55%	**4.10%**
	P_2O_5 (t)	52	193	201	193	170	174	813	626	**2,422**
	$CaCO_3$ (%)	25.1	30.1	45.5	55.2	53.5	57.1	57.47%	58.6%	**55.5%**
	$CaCO_3$ (t)	126	601	1,365	2,483	2,406	2,569	12,931	10,331	**32,812**
Mined Saprolite	**ktonnes**	501	1,814	1,358	465	40	313	106	0	**4,596**
	P_2O_5 (%)	10.35	10.03	9.23	6.74	8.27	6.77	2.90%	0.00%	**9.22%**
	P_2O_5 (t)	52	182	125	31	3	21	9	0	**424**
	$CaCO_3$ (%)	14.04	15.28	15.58	14.48	14.88	14.78	4.39%	0.00%	**15.08%**
	$CaCO_3$ (t)	126	496	379	121	11	83	26	0	**1,241**
Mined Fresh	**Ktonnes**	0	187	1,643	4,035	4,460	4,187	22,394	17,636	**54,542**
	P_2O_5 (%)	0.00	5.71	4.62	4.00	3.74	3.65	3.59%	3.55%	**3.66%**
	P_2O_5 (t)	0	11	76	161	167	153	805	626	**1,998**
	$CaCO_3$ (%)	0.00%	31.5	33.55	32.70	30.00	33.17	32.20%	32.72 %	**32.34%**
	$CaCO_3$ (t)	0	106	986	2,362	2,395	2,486	12,905	10,331	**31,571**
Waste	**ktonnes**	722	2,805	6,775	13,909	16,743	19,126	91,105	34,712	**185,897**
Rehandled Waste	**ktonnes**	22	84	203	417	502	574	2,733	1,041	**5,577**
Total	**ktonnes**	1,222	4,806	9,775	18,409	21,244	23,626	113,605	52,348	**245,035**
Strip Ratio		1.4	1.4	2.3	3.1	3.7	4.3	22,500	17,636	**3.1**
Joca Tavares (Included In Above)										
Phosphate Rock Mined	**ktonnes**	0	0	0	0	0	563	1,949	0	**2,512**
	P_2O_5 (%)	0.00%	0.00%	0.00%	0.00%	0.00%	3.95%	2.22%	0.00%	**3.80%**
	P_2O_5 (t)	0	0	0	0	0	22	73	0	**95**
Waste	**tonnes**	0	0	0	0	0	133	774	0	**907**

1.15 RECOVERY METHODS

The mineral processing facilities for the Aguia project are designed to treat fresh carbonatite and saprolite rock types from the Três Estradas mineral deposit. These plant design is planned for 4.5 Mtpy. The primary products will be phosphate concentrate, which will be sold for fertilizer manufacture and a calcitic concentrate, which may be sold as agricultural lime, or a lime product for use in cement manufacture or flue gas desulphurization.

Phosphate material, transported from the mine to the concentrator, will be dumped into the primary crusher, which will crush the material to minus 150mm. Then the material will be fed into a semi-autonomous grinding (SAG) mill to be ground to minus 0.212 mm. From the SAG mill the phosphate will go to the column flotation circuit, and the phosphate will be floated off, then dried for sail, and the phosphate tailings will then proceed to the calcite circuit. The calcite circuit is also a column flotation design. The calcite will be recovered, a portion dried.

On both circuits magnetic separation will be used to upgrade the phosphate and calcite concentrates.

Table 1.9 summaries the process design and recoveries.

Table 1-9 Process Design and Recoveries

Item	Units	Value
Plant Capacity Fresh Carbonatite	t/y	4,500,000
Plant Capacity Saprolite	t/y	1,250,000
Operating Availability	%	90
Operating Availability	d/y	328.5
Plant Capacity	t/h	570
Concentrate Grade, % P_2O_5	%	30.3
Concentrate Recovery, % P_2O_5	%	84.6
Calcite Concentrate Grade, %CaO	%	48.5
Overall Recovery, % CaO	%	73.3

1.16 MARKETS

Aguia's Três Estradas property is located in the growing farming region in southern Brazil. While the market for phosphate is strong (and expanding) domestic supply of phosphate does not exist. Indeed, 100% of phosrock currently converted to SSP in RS is provided via African imports. The potential market for Aguia extends into Argentina and Uruguay.

1.16.1 Phosphate

Based on a market study by Agroconsult Consultoria e Projetos (Agroconsult), a company specializing in market analysis of Brazilian agricultural commodities, as well as their own understanding of the industry in the region, Aguia has identified a strong opportunity to produce both a phosphate concentrate ('phosrock'). The phosrock will be bought and used as feedstock for the production of super single phosphate (SSP). By producing the concentrate as opposed to the finished SSP product, Aguia will enjoy a strong competitive position while simultaneously greatly reducing the capital requirements of the project. A forecast price for phosrock of US$210/t was utilized in this PEA for the entire Life of Mine.

1.16.2 Calcite

In addition to a phosphate product, the Tres Estradas project will produce a high-quality calcite by-product. Agroconsult have predicted a growing market in 'aglime' (a related calcite product) in the region. While the aglime market is currently somewhat constrained, Aguia has begun discussions with other local users of calcite animal nutrition as well as the cement and power producing industries. With the projected high quality of the calcite, as well as the fact that is a by-product and therefore, it might be reasonable to expect that the Aguia will enjoy a strong competitive advantage and displace current, higher cost, producers.

1.17 Environmental Studies, Permitting and Social or Community Impact

The Brazilian National Environmental Policy is executed at three different levels of public administration: federal, state and municipal. Coordinating and formulating the rules is the responsibility of the Ministry of the Environment which is directly linked to the National Environmental Council (CONAMA). CONAMA's responsibility is to establish the rules, standards and criteria guidelines so that environmental licensing can be granted and controlled by the state and municipal-level environmental agencies, which are part of the National Environmental System (SISNAMA), and by the Brazilian Institute for the Environment and Renewable Resources (IBAMA). IBAMA is the government agency under jurisdiction of the Ministry of Environment, and is responsible for executing the Brazilian Environmental Policy at the federal level.

The basic environmental process is initiated with the collection of baseline data, following the submission of a conceptual mine plan. Baseline data collection is followed by an Environmental Impact Report (RIMA), which is a summary of the environmental impact assessment (EIA) presented in simple language adequate for public communication and consultation. The EIA and RIMA are made available for public review and comment.

Once the EIA/RIMA process has been completed, an Environmental License (LA) is required to move the project forward. The LA is issued by the State Agency, under guidelines developed by the CONAMA. There are three stages in the licensing process:

- Preliminary License (LP): Indicates the environmental viability of the enterprise and approves the location and concept of the project. The LP is subject to a specific environmental impact assessment and a formal public hearing.

- Installation License (LI): Authorizes the start of the mining project, permits the engineering work and is subject to the presentation of an environmental control plan.
- Operation License (LO): Allows the beginning of the mining operation. The company is required to provide evidence that all the required environmental programs were orderly initiated and installed.

Golder is conducting the baseline environmental and social survey of TE and JT areas. The EIA should be completed in the next quarter and filed at the Rio Grande Environmental Agency together with a preliminary environmental license to go ahead with detailed engineering of the project.

1.18 Capital and Operating Costs

Capital cost estimates for the Três Estradas project are projected for the phosphate and calcite beneficiation, and the associated construction required to support the extraction of the phosphate and calcite. Included in the estimate the costs for phosphate and calcite beneficiation, utilities, maintenance and administrative facilities, project development, acquisition, sediment controls, diversions, mining equipment and the pre-production operating costs to bring the plant online.

To the extent possible and reasonable, estimates are based on data gathered by Millcreek. In some cases, costs were extrapolated from Millcreek's experience with other worldwide mining operations and information provided by previous studies commissioned by Aguia.

Included in the capital estimate are a contingency of 15%, and working capital of 5% for Year 1. The LOM capital costs for the aforementioned (net of revenues for product produced in Year -1) are summarized below in Table 1.10

Table 1-10 Capital Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Pre-Production OPEX	0	0	10,244	10,244			10,244
Revenues	0	0	-26,964	-26,964			
Surface & Mineral Rights	1,316	0	0	1,316	0	0	1,316
Mining Equipment	0	0	5,622	5,622	5	49	5,671
Utilities	112	4,623	1,529	6,264	0	0	6,264
Plant Area	0	32,789	35,055	67,844	22,485	22,485	90,329
Dams	826	7,745	5,475	14,046	0	7,878	21,925
Shops	0	718	1,796	2,514	0	0	2,514
Administration Area	0	915	0	915	0	0	915
Project Development	6,432	7,675	4,716	18,823	1,470	1,470	20,293
Contingency (15%)	1,303	8,170	8,129	17,602	4,279	12,140	29,742
Working Capital (5%)	0	0	0	0	8,388	0	0
Total	**9,988**	**62,636**	**45,602**	**118,226**	**36,626**	**44,023**	**189,212**

As with the capital cost operating costs are based on information gathered or developed by Millcreek. The average operating costs for the Três Estradas project are summarized below in Table 1.11.

Operating costs for the phosphate is $97.89 per tonne of concentrate. The phosphate carries all of the mining, G&A, and crushing and grinding, plus the cost of the flotation of the phosphate.

When operating costs are prorated to the phosphate and calcite revenues, then the cost of the phosphate is reduced to $65 per tonne of concentrate. The basis for the proration are:

Operating costs, mine, G&A, crushing and grinding, are split on a revenue basis.

LOM revenue split is 57% / 43% (phosphate / calcite). The splits are calculated annually for the project.

Table 1-11 Operating Cost Summary

Category	Total
Mining	
Cost ($/t) ROM	5.48
Total Mining Cost $/ t mined	1.32
Total Cost $/t Phosphate	49.24
Phosphate Beneficiation	
Cost ($/t) ROM	4.63
Total Cost $/t Phosphate	41.55
Calcite Beneficiation	
Cost ($/t) ROM	2.83
Total Cost $/t Calcite	7.31
General & Administrative	
Cost ($/t) ROM	0.79
Total G&A Cost $/t Phosphate	7.09
Total Costs	
Direct Cost ($/t) ROM	13.73
Total Phosphate Cost $/t Phosphate	97.89
Total Cost $/t Calcite	7.31

1.19 Economic Analysis

1.19.1 Economic Analysis

At Três Estradas the mine commences operation in Year -1 and provides phosphate for the plant to be commissioned in Year -1. Full production is reached in Year 3, as the higher grade saprolite is processed early in the mine life. The mine plan presently assumes 14 years of operation, and phosphate concentrate production from the plant averages 466,000 tonnes per year, with calcite production averaging 1.8Mt per year.

Presently there are no off-site costs allocated for this study. All costs and revenues are based on a gate price of the phosphate and calcite concentrate. Table 1.12 summarizes the economic basis used for this estimate.

Table 1-12 Principle Assumptions

Assumption/Basis	Value	Basis
Exchange Rate	3.80:1	BRL:USD
Phosphate Price	$210.00	USD/t concentrate
Calcite Price	$47.00	USD/t concentrate
Depreciation	14.29%	7 Year Straight Line
Production Royalty	2%	Gross Proceeds
CFEM	2%	Gross Proceeds
Income Tax	34%	

An economic analysis for Três Estradas shows the Pre-Tax NPV, discounted 7.5%, is $571.8M, and the IRR is 50.4%. The Pre-Tax basis excludes the Corporate Tax and the Indirect Tax Cash Adjustments. On an After-Tax basis, the NPV, discounted 7.5%, is $400.0M. The IRR on an After-Tax basis is 43.0%. The NPV is after an investment of $134.9M ($118.2M net of revenues in Year -1) for direct Capital costs and $10.2M in Operating Capital Costs. During the startup period of the beneficiation plant, phosphate concentrate will be produced and a revenue of $27.0M will offset some of the capital investment. Table 1.13 summarizes the After-Tax NPV's at different discount rates.

Table 1-13 After Tax NPV

Discount Rate	NPV (000's)
5%	$523,803
7.5%	$400,014
10%	$307,722

1.19.2 Financing

There are a number of factors that lead Millcreek to the conclusion that it is reasonable to assume Aguia is well placed to secure financing for the Tres Estradas project. These include:

- The local southern Brazil phosphate and calcite markets, the competitive landscape, and down-stream capacity expansions of SSP (for which production phosrock is the feedstock);
- The funding participation of existing and strategic shareholders, the potential for off-take agreements, as well as for associated project funding;

- Availability of standard and Government sponsored project debt within a low cost environment;
- The ability of the Company its project development team to raise equity as required and the competitive landscape from a perspective of investment and asset acquisition in the agriculture industry of Brazil.

1.20 OPPORTUNITIES, RISKS AND RECOMMENDATIONS

As a result of this PEA study. Millcreek has identified various potential opportunities and risks.

Opportunities exist to increase project value through additional exploration drilling, additional metallurgical sampling and test work, further consideration of column floatation and magnetic separation and the use of alternate technologies to recover fines.

Project risks include a lack of definition on the availability of suitable construction material (for tailings dam, water reservoir), as well as a detailed geochemical, geotechnical and hydrologic assessment for the area. Currently available information is considered appropriate for the level of a PEA.

2 INTRODUCTION

Aguia Resources Ltd's Três Estradas project site, and its satellite site, Joca Tavares, are on phosphate deposits located nearby to each other, in the southern region of the State of Rio Grande do Sul (RS), Brazil. In February, 2016, the Millcreek Mining Group (Millcreek) was engaged to perform an updated preliminary economic assessment (PEA) of the project.

Millcreek has prepared this PEA on behalf of Aguia Resources Ltd (Aguia) in accordance with the current requirements of Australasian Code for Reporting of Exploration Results, Mineral Resources, and Ore Reserves ('the JORC Code'). The JORC code is a professional code of practice that sets the minimum standards to be followed for public reporting of minerals exploration results, mineral resources, and ore reserves.

Aguia Resources Ltd. is an exploration and development company focused on Brazilian phosphate projects to supply the Brazilian agriculture sector. Aguia is listed on the Australian Stock Exchange (ASE) under the symbol AGR and has offices in Sydney, Australia and Belo Horizonte, Brazil. The company currently controls over 1,110 km^2 of land in the states of Rio Grande do Sul and Paraiba containing phosphate mineralization through exploration permits it has acquired from the Brazilian National Department of Mineral Production (DNPM). The company seeks to develop its holdings of phosphate deposits into viable mining operations providing phosphate and agricultural limestone to Brazil's agriculture industry.

2.1 Recent Project History

In 2012 SRK Consulting (Canada) Inc., were engaged by Aguia to prepare a geological model and mineral resource estimate for the project, in accordance with the JORC code. The results of additional drilling were incorporated in an updated resource estimate released by Aguia in January, 2013. In April, 2013, permit exploration rights for areas including Três Estradas and Joca Tavares were granted by the DNPM, and shortly thereafter SRK provided an updated mineral resource statement to reflect Aguia's revised permit status.

SRK's updated resource estimate and ITR for 2013 served as the basis for a conceptual mining study / PEA completed in September, 2014. This PEA study developed and updated during the interim, with a summary report released in August, 2015.

2.2 TERMS OF REFERENCE

2.2.1 Statement of Scope

In responding to Aguia's Request for Proposal of this project, Millcreek adopted the following charter statement concerning the Scope of Work:

Based on updated information from in-fill drilling and metallurgical test-work, as well as revised assumptions on mine planning, mineral processing and project economics and revenues, Millcreek will [prepare a revised PEA for the Três Estradas Project].

2.2.2 Scope of Work

The Scope of Work for this project consisted of two phases; a site visit followed by an update to the previously existing PEA study.

The purpose of the 'Phase 1' site visit was to meet the requirements of Competent Persons to make a personal site inspection, verify that exploration has been underway (even if construction has not yet begun), review / retrieve data and information, meet Aguia's key project personnel and further develop an understanding of the project needs.

'Phase 2' of the study covered an update of the PEA study previously undertaken by SRK (see Section 2.1 History, above). The following Scope of Work items were addressed:

- Preparation of Design Basis Memorandum (DBM);
- Audit of geologic models and resource estimates for Três Estradas and Joca Tavares;
- Conduct a "trade-off" study to determine if Joca Tavares adds value to overall economics of the Três Estradas project;
- Preparation of geologic models for use in mine planning;
- Mining approach, equipment selection;
- Mine plan scheduling (accounting for constant annual saleable product);
- Mine waste planning;
- Review of mine and plant infrastructure;
- Review of metallurgical test results, proposed design parameters, preliminary flowsheet and equipment selection, recovery rates and projected operating costs;
- Socio-environmental considerations;

- Capital and operating cost scheduling;
- Economic assessment, IRR / NPV valuations, sensitivities;
- Project risks and upsides;
- Preparation of a JORC-compliant PEA report, appropriate for the purposes of reporting resources and preliminary project economics on the Australian Securities Exchange (ASX).

Unless otherwise specified, the term 'Três Estradas' shall be used to describe both the Três Estradas project site as well as that of its satellite project, Joca Tavares.

2.3 SITE VISIT

In accordance with accepted standards and best-practises for certification of resources, Millcreek personnel performed a personal inspection of the project sites from March 17, 2016 through March 19, 2016. Millcreek's representative included Mr. Steven Kerr (C.P.G.-10352) and Mr. Alister Horn (MMSAQP-01369), who are considered Competent Persons under the JORC code.

Mr. Kerr and Mr. Horn were accompanied and assisted by various Aguia staff including Dr. Fernando Tallarico, Mr. Thiago Bonas and Mr. Alfredo Nunes

2.4 STATEMENTS OF LIMITATION

As a PEA, this report serves to describe Millcreek's efforts in establishing mineral resources for the Três Estradas project. Our work, as described in this document, is insufficient for the basis of estimating and certifying estimates of economic reserves.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

Economic analyses in technical reports are based on commodity prices, costs, sales, revenue, and other assumptions and projections that can change significantly over short periods of time. As a result, economic information in a technical report can quickly become outdated. Continued reference to outdated technical reports or economic projections without appropriate context and cautionary language could result in misleading disclosure.

3 RELIANCE ON OTHER EXPERTS

Millcreek has prepared this report specifically for Aguia. The findings and conclusions are based on information developed by Millcreek available at the time of preparation and data supplied by outside sources. Millcreek staff has not conducted any independent field work for the preparation of this report and have relied on the results of exploration documented in various public reports and on recent drilling data supplied by Aguia.

Aguia has supplied the appropriate documentation that supports the exploration permits it holds with the DNPM of Brazil to be in good standing. The existence of encumbrances to the exploration permits has not been investigated. Other Millcreek personnel assisted in the compilation and digitization of historical data and documents and the information contained within them. All this work was reviewed and deemed reasonable for this level of study by the authors.

Since 2011 Aguia has carried out a systematic and detailed exploration program to delineate phosphate mineralization at the two deposits. In 2012, Aguia retained SRK to complete a mineral resource report following the second drilling campaign at Três Estradas. Over the next three years SRK completed a second mineral resource report, a conceptual mining study and a PEA on Três Estradas. Also during this time frame Aguia had engaged SGS Lakefield Research, KEMWorks Technology, Inc., and the University of Sao Paulo to characterize the mineralization and metallurgy. It had also engaged Walm Engineering and Golder Associates to evaluate water and environmental considerations for a proposed mine development.

Since the last PEA prepared by SRK in 2015, there has been additional infill drilling completed at Três Estradas. Aguia has also retained the Eriez Flotation Division of Eriez Manufacturing Co. (Eriez), to complete a metallurgical testing program utilizing column floatation and to evaluate recovery of calcite as a byproduct. The additional drilling, metallurgical testing, and the addition of calcite as a byproduct are significant and positive impacts to the project that prompt the issuance of this PEA study by Millcreek. This is also the first time that resources for Joca Tavares are being presented that are being evaluated as a satellite phosphate deposit that will be mined and transported to Três Estradas for processing.

Millcreek relied on marketing information and product sales prices provided in marketing studies completed by Agroconsult for Aguia in June, 2015. Millcreek has not verified the market information and sales prices. Our reliance on this information applies to Sections 14, 15, and 16.

Millcreek relied on information regarding Brazil taxes and credits in Section 16 provided in a review conducted by L&M Advisory for Aguia.

4 PROPERTY DESCRIPTION AND LOCATION

The Três Eestradas Project is located in the municipality of Lavras do Sul, approximately 320 kilometers (km) southwest of Porto Alegre, the capital city of Rio Grande do Sul in southern Brazil and 1,790km south of Brasilia, as shown in Figure 4.1. The mining operation will consist of mining phosphate from the Três Estradas deposit as well as mining phosphate from the Joca Tavares deposit located southeast of Três Estradas. Phosphate material from both deposits will be milled and processed at Três Estradas.

The Três Estradas Project area is situated at Latitude -30.906137°, Longitude -54.197328°. Joca Tavares is situated at Latitude -31.002629°, Longitude -53.784480°. Mineral tenure is held through three exploration permits for Três Estradas and one exploration permit for Joca Tavares. Exploration permits are issued by the DNPM as listed in Table 4.1. The four exploration permits combined, cover a total area of 2,881.57ha. Figure 4.2 shows the three exploration permits for Três Estradas. Figure 4.3 shows the exploration permit for Joca Tavares.

Table 4-1 Aguia Resources Exploration Permits

Area	DNPM Permit	Issuing Date	Period	Expiry Date	Area (ha)	Status	Municipality/State	Title Holder
Três Estradas	810.090/1991	4/12/2006	3	8/16/2012	1,000.00	Permit Extension	Lavras do Sul/RS	CBC*
Três Estradas	810.325/2012	4/29/2013	3	4/29/2016	900.95	Permit Extension	Lavras do Sul/RS	CBC
Três Estradas	810.988/2011	4/15/2015	3	4/15/2018	84.39	Permit	Lavras do Sul/RS	Falcon Petróleo S.A.
Joca Tavares	810.996/2010	4/29/2013	3	4/29/2016	896.23	Permit Extension	Bage/RS	CBC
				Total Area	**2,881.57**			

*Companhia Brasileira do Cobre

4.1 OWNERSHIP

Aguia holds 100% interest in the four exploration permits covering the two phosphate deposits. Three of the exploration permits were issued to Companhia Brasileira do Cobre (CBC) by the DNPM. On July 1, 2011, CBC and Aguia Metais Ltda., a subsidiary of Aguia Resources in Brazil, executed an option agreement providing the irrevocable purchase option of these mineral rights by Aguia Metais (or its affiliate or subsidiaries).

On May 30, 2012 Aguia Metais exercised the purchase option concerning the mineral right of permit 810.090/1991 by means of its affiliate Aguia Fertilizantes S/A (Aguia Fertilizantes). On July 10, 2012, CBC and Aguia Fertilizantes executed an irrevocable agreement providing the assignment of these mineral rights to Aguia Fertilizantes. On July 20, 2012 CBC filed a request before the DNPM applying for the transfer of these mineral rights to Aguia Fertilizantes. On May 16, 2013 Aguia Metais exercised the purchase option concerning the mineral rights of permit 810.996/2010 and 810.325/2012 by means of its affiliate Aguia Fertilizantes S/A (Aguia Fertilizantes). On March 26, 2014, CBC and Aguia Fertilizantes executed an irrevocable agreement providing the assignment of these mineral rights to Aguia Fertilizantes. On April 07, 2014 CBC filed a request before the DNPM applying for the transfer of these mineral rights to Aguia Fertilizantes.

The requests are under DNPM´s analysis. As per the Brazilian mining legislation, in order to be considered lawful and also to have legal effectiveness, the DNPM will analyze technical and legal aspects in order to approve or oppose the transfer. The assignor shall continue to be liable for any right or covenant regarding the mining title up to the regular register of the full assignment.

Although the exploration permit 810.090/1991 expired on August 16, 2012, according to Brazilian law, the mineral rights remain fully valid and in force during the period of analysis by the DNPM of the Final Exploration Report timely filed. As stated in the legal title opinion provided by Mendo De Souza Advogados Associados, Aguia is in compliance with the mining regulation related to the mineral rights, which includes meeting the requirements of the DNPM rules, the payment of the annual fee per hectare, or any other applicable fees.

The fourth permit, DNPM# 810.988/2012, is held by Falcon Petróleo S.A., a subsidiary of Aguia.

4.2 Licensing Process

Exploration permits are granted for up to a three-year period, renewable for a further period at the decision of DNPM, under the objective conditions stipulated in the mining code. Exploration must begin no later than 60 days after the granting of the permit. Exploration must not stop, without due reason, for more than three consecutive months or 120 non-consecutive days. The permit holder must notify the DNPM of any changes to the exploration plan and, on completion of the work, submit a final report on exploration. The holder of an exploration permit is required to pay annual fees to DNPM in the amount of R$1.90/ha for the first three years, increasing to R$2.87/ha for authorized term extensions.

The holder of an exploration permit is also responsible for all expenses related to DNPM site inspections of the area.

Mining concessions are granted, solely and exclusively, to individual firms or companies incorporated under Brazilian law, which have head offices and management in Brazil, and are authorized to operate as a mining company.

Mining concessions can be applied for upon the presentation of: (i) a mining plan within one (1) year[1], counted from the approval of the final exploration report by DNPM; and (ii) installation license issue by environmental license. The mining plan must include an economic feasibility analysis, and the company must demonstrate to the DNPM that it has the financial capability to carry out the forecasted plan. The application for a concession must also include a Plan for Recovery of Degraded Areas (PRAD) covering water treatment, soil erosion, air quality control, re-vegetation or reforestation and site reclamation. Once the legal and regulatory requirements are met, a mining concession is granted. The terms of the concession will include conditions concerning mitigating environmental impact, site safety, construction codes, waste disposal and site reclamation.

The holder of a mining concession shall also comply with the Compensation for the Exploitation of a Mineral Resource (CFEM), which is a legal royalty based on the type of commodity and levied on the sale of the ore, discounted of marketing taxes, external transportation and insurance. Mining companies that verticalize their operations (i.e., industrialize the ore) calculate royalty not on the proceeds from sales of the industrialized product, but rather on the cost of extracting and processing the ore up to the stage of the production process immediately before industrialization occurs. The owner of the surface rights must also be financially compensated for the occupation of the land and indemnified in case of damages caused by the mining activities.

The company holding the mining concession has the right to mine the deposit until it is completely exhausted according to the mining plan approved by DNPM and the environmental license granted by the relevant agency. The mined product can be disposed of without any restriction except general taxation. The concession holder also has the right to sell, transfer or lease the mining rights to another mining company, with prior consent of the federal government.

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[1] . Upon holder request, this term may be renewable for one (1) year at DNPM's discretion.

Work described in the mining plan must start no later than six months from the publication of the granting notice in the Federal Gazette. Once mining activity has begun it must not be suspended, without due reason, for more than six months without risking the penalty of possible cancellation of the concession. Annual statistical data on production must be reported to DNPM which will also send representatives on periodic site inspections.

4.3 Mining Activities in International Border Zones

Both project areas fall within the International Border Zone of Brazil. The International Border Zone is a 150km buffer zone to the country's international borders. Both Três Estradas and Joca Tavares are within this zone with respect to the Uruguay border. The mining activities in border zones are ruled by special laws. According to Federal Law No. 6.634/1979 and Decree No. 85.064/1980, mining activities in border areas must be submitted to prior approval of the National Defense Council. Companies interested in performing mining activities within the border areas must fulfill these requirements:

- At least 51% of the company's capital shares be held by Brazilians;
- At least two-thirds of the employees involved in the mining activities must be Brazilian citizens;
- The management of the company must be exercised by a majority of Brazilian individuals.

4.4 Right of Access

Brazilian Law (Mining Code, Article 27) grants to the titleholder of an exploration permit or mining concession the right to enter in the area comprised by the mineral right and execute the exploration and exploitation activities. This establishes the legal means by which the development of mining activities cannot be stopped.

The access to the surface areas may occur by means of a private agreement with the landowner or by means of a judicial authorization, issued through a specific lawsuit, under which the local court will guarantee the access of the area by exploration permit or mining concession holder and define the amount of the indemnification and rent to be paid to the landowner.

Usually during the exploration permit phase the title holder of the mineral right enters into non-judicial agreements with the holders of the surface areas comprised by the title through the payment of an agreed upon amount. In the event the parties are unable to enter into agreement, the title holder is able to file the lawsuit, as per described above.

During the exploitation phase, in the event that the holder of the mining concession does not purchase the real estate properties comprising the mining concession, access and occupation of the area comprising the mineral right as well as access and occupation of any area which might be necessary for the performance of the exploitation activities are granted by law,. In this case, access and occupation of the areas to be covered by the exploitation activities may also take place by means of an agreement with the surface owners or by means of a lawsuit, which shall guarantee the lease of the land by the mineral right title holder by means of the payment of an amount as rent and indemnification. Further the holder of the licence is entitled to servitudes over the land covered by the licence or adjacent to it.

In addition to the above, according to Brazilian Law, a compensation equivalent to 50% (fifty percent) of the CFEM tax will be due to landowners upon the sale of the ore, discounted of marketing taxes, external transportation and insurance. Mining companies that verticalize their operations (i.e., industrialize the ore) calculate royalty not on the proceeds from sales of the industrialized product, but rather on the cost of extracting and processing the ore up to the stage of the production process immediately before industrialization occurs This legal royalty is due just in the areas where there is exploitation.

4.5 ACCESSIBILITY

The Três Estradas project is located approximately 30km southwest of Lavras do Sul, located in the south-central portion of the state of Rio Grande do Sul. The project area is located approximately 320km from Porto Alegre, the capital and largest city of Rio Grande do Sul. Porto Alegre is a major metropolitan hub to the region with a population of approximately 4.4 million inhabitants. A network of modern paved highways connect Lavras do Sul to Porto Alegre and other communities throughout the region. Highways BR-290, BR-392, and BR-357 are the primary links from Porto Alegre to Lavras do Sul.

Lavras do Sul is a community of 8,300 inhabitants. The town has a history founded in gold mining dating back to the 1880s. The town has a well-developed infrastructure, availability of unskilled and semi-skilled mining personnel and access to non-specialized supplies. Aguia bases its field operations in Lavras do Sul with an office complex and core storage facility.

From Lavras do Sul the Três Estradas project area is accessed by RS-357, southwestward for approximately 203km, then south on BR-473 for 7km to an intersection with a secondary ranch road. The southeast corner of the property is located another 10km northeast on the ranch road from the intersection with BR-473.

Joca Tavares is located 23km south-southeast of Lavras do Sul. From Lavras do Sul access to Joca Tavares is via a secondary road that splits off of RS-357. This road is traveled for approximately 20.3km before turning left onto another secondary road. The next road is traveled approximately 4.8km northeastward where it joins another secondary road heading southwest for 4.8km. After 13.7km, a right turn is made onto a dirt road that heads north 5.4km to the deposit. By vehicle the overall route to Joca Tavares from Lavras do Sul is 49km and the overall route between Três Estradas and Joca Tavares is 84km. Figure 4.4 shows the preferred route between the two deposits.

4.6 Local Resources

Electric power for the region is provided by Companhia Estadual de Energia Elétrica (CEEE – State Electric Power Company). CEEE has 62 substations in Rio Grande do Sul with a total capacity of 8,237.4 MVA and 6,056km of transmission lines that are supported by 15,058 structures and operate voltages of 230, 138, and 69 kilovolts.

The water supply in the Lavras do Sul and Bagé municipalities is managed by Rio Grande do Sul State water utility CORSAN. Regional water demands are carefully managed during the summer months when demand is high due to local rice farming, to avoid impact on urban supply. Aguia has retained Walm Engenharia, a local consulting firm to provide hydrological assessment for the project. Walm has recommended that water to the project area should be supplied through development of small reservoirs or dams to manage water flow from local streams.

A railroad crosses through the Três Estradas project area and through Lavras do Sul. The railroad is operated by RUMO Logistics and links the cities of Cecequi and Rio Grande. The city of Rio Grande is the largest port in the state.

4.7 Climate and Physiography

The region has a humid subtropical climate. Annual precipitation ranges from 1,300 to 1,800 millimeters (mm) and is relatively uniform throughout the year. November and December are typically the driest months of the year where monthly rainfall may fall below 100mm. Temperature ranges from 0° to 22°C between April and September and 13° to 30°C from October to March. Frost is known to occur during the winter months and temperature occasionally reaches 40°C in the summer.

The landscape surrounding Lavras do Sul and the two phosphate deposits can be characterized as low, gentile sloping hills. The gentile hills and intervening valleys are a mix of Pampas grass lands, shrubs, and small to medium height trees. Três Estradas is located between two hydrographic basins: the Santa Maria River Basin, and the Camaquã River Basin. Elevation for the Três Estradas project area ranges from 249m to 367m with a mean elevation of 348m MSL for the deposit area. Joca Tavares is located within the Camaquã River Basin with elevation ranges from 220m to 297m with a mean elevation of 248m MSL for the deposit area. Primary land use is agriculture, supporting rice farming, cattle and sheep.

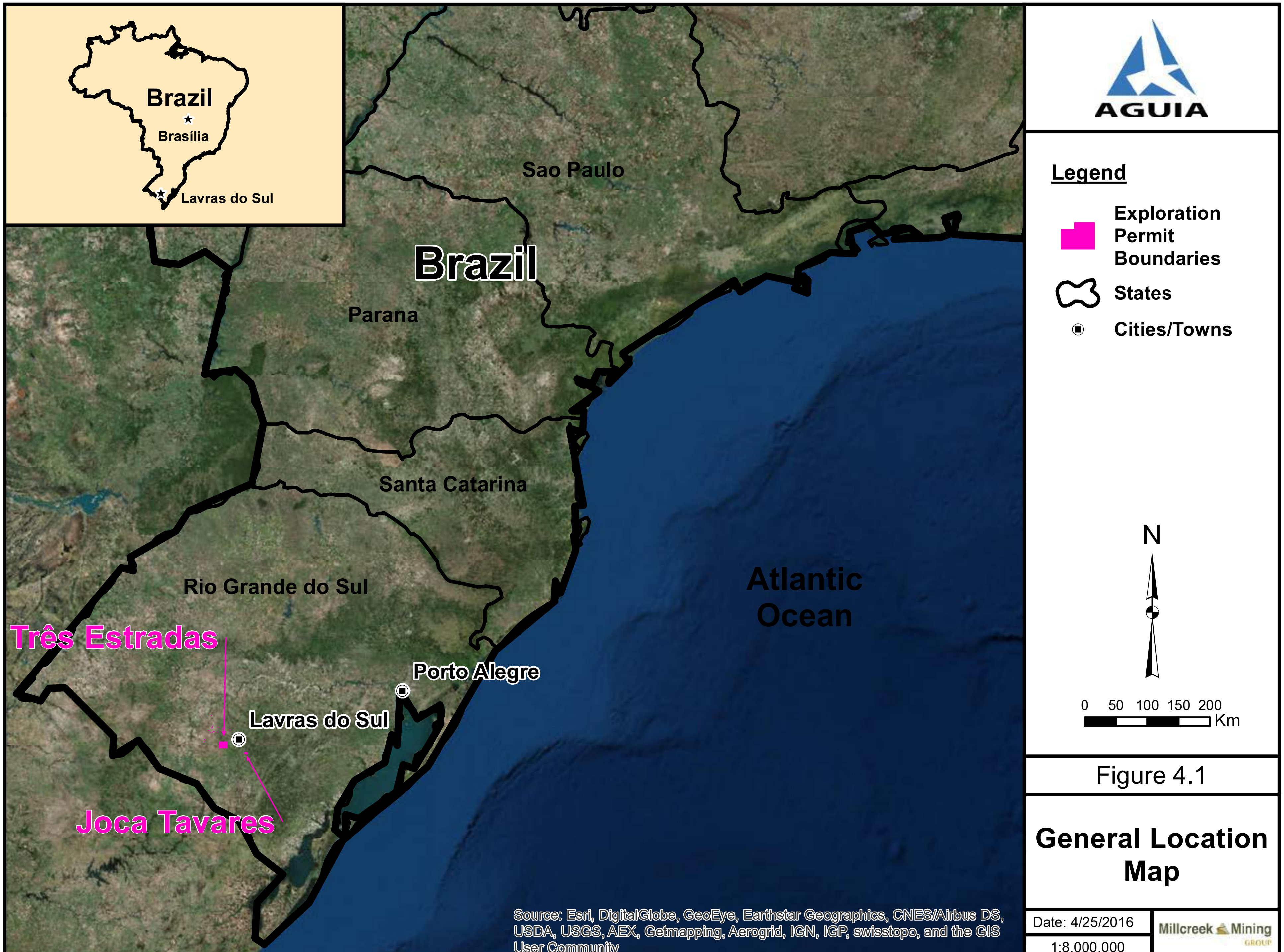

Figure 4.1

General Location Map

Date: 4/25/2016

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Millcreek Mining Group

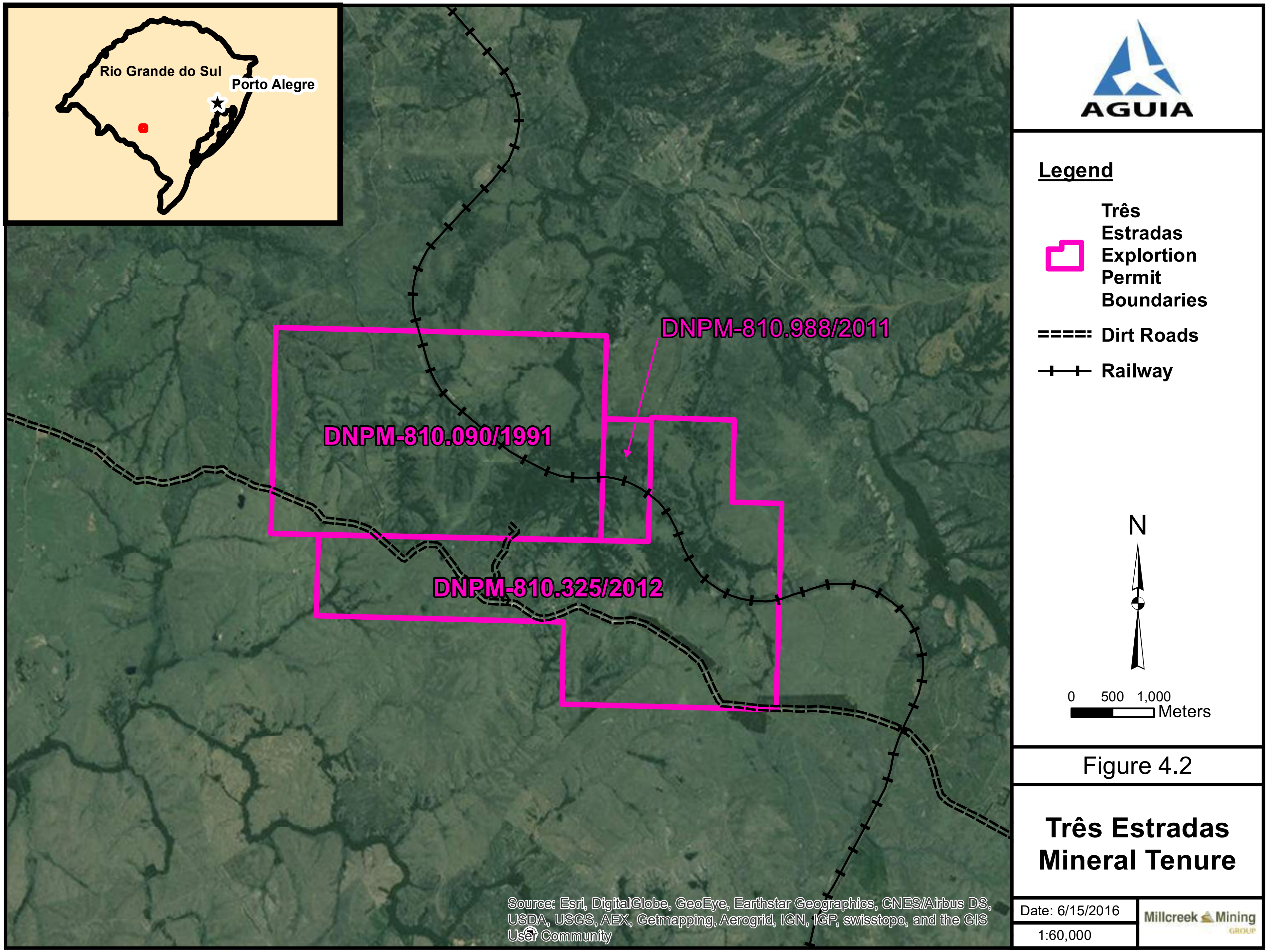


Figure 4.2

Três Estradas Mineral Tenure

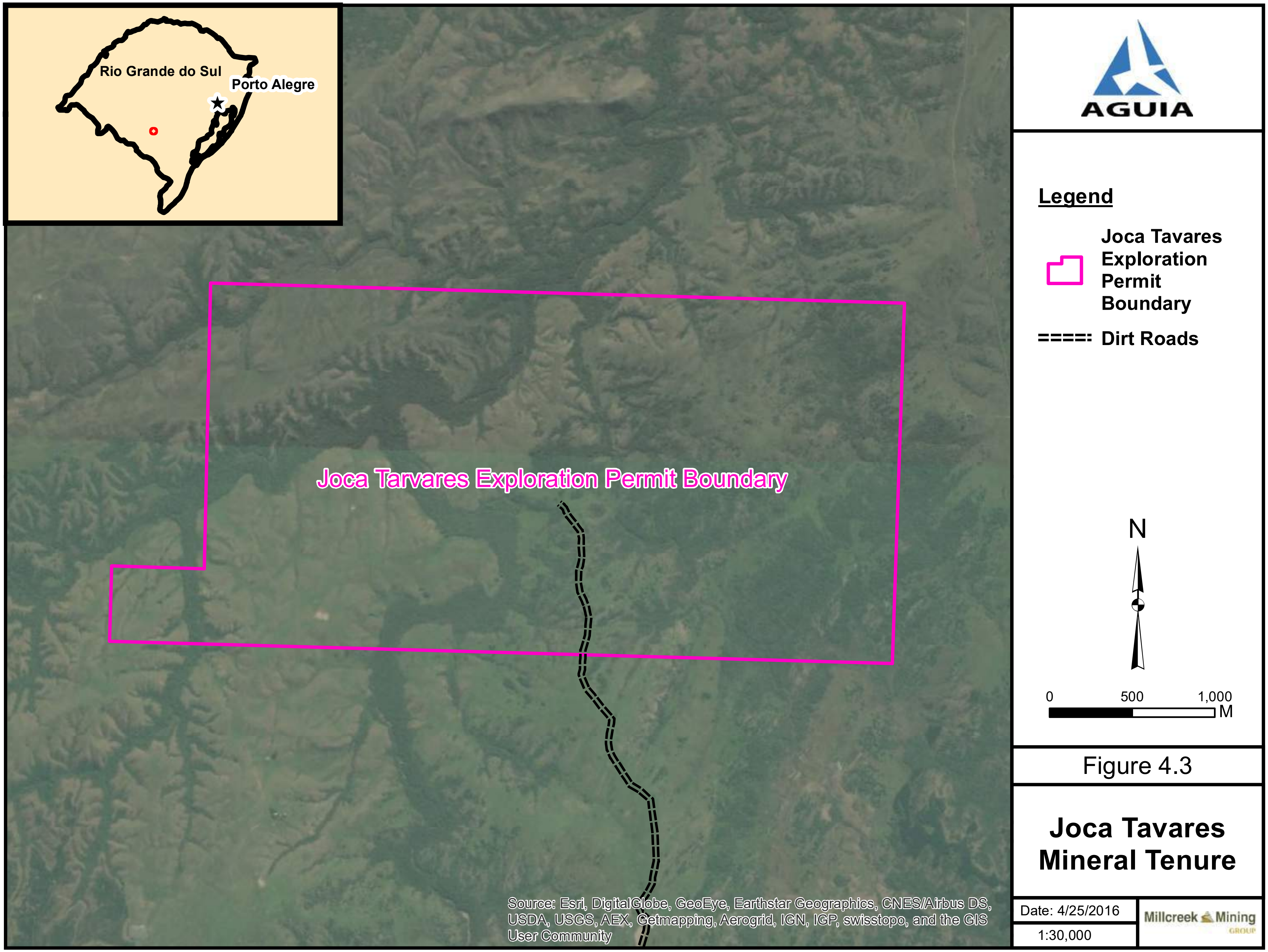


Figure 4.3

Joca Tavares Mineral Tenure

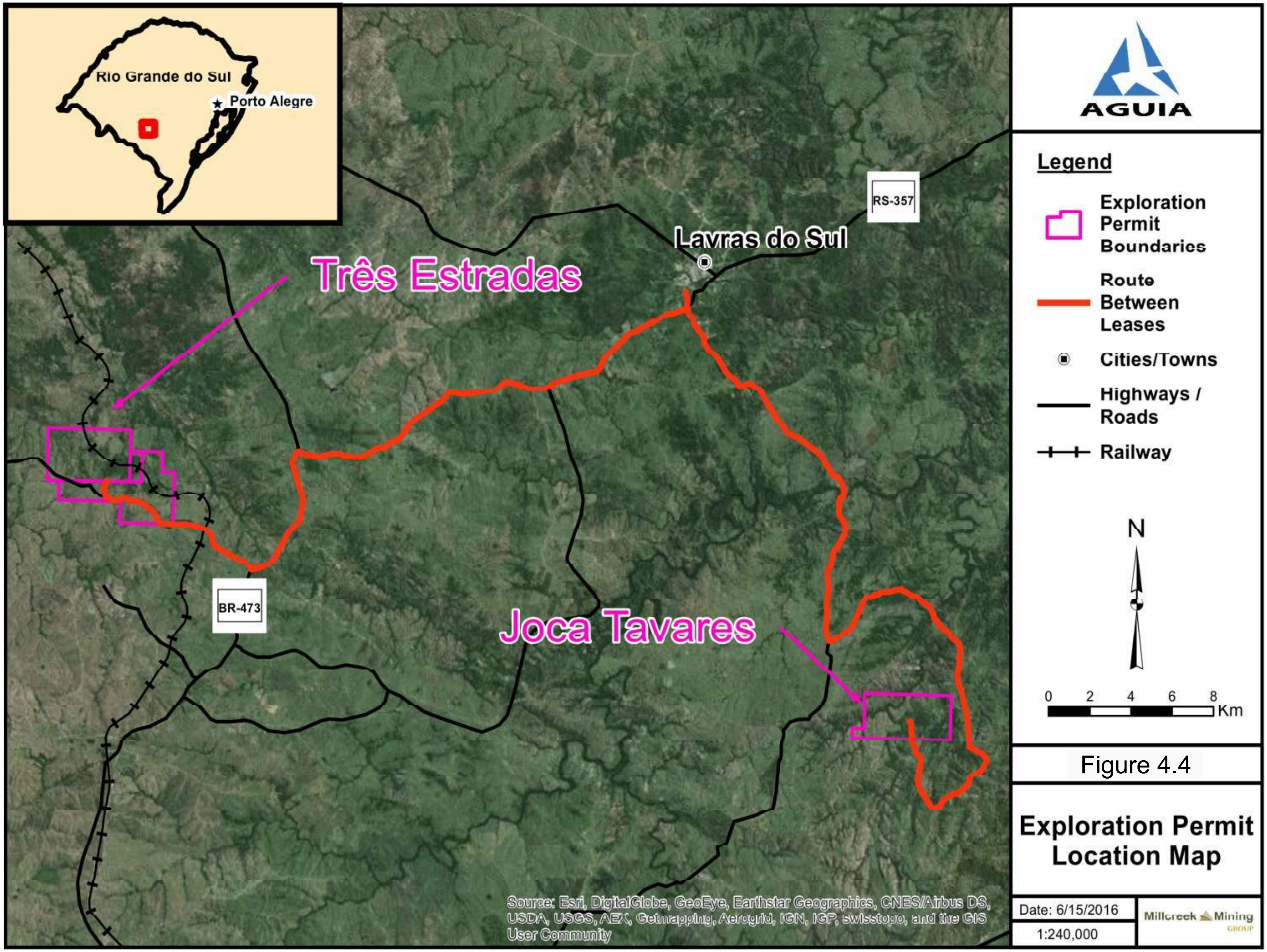


Figure 4.4

Exploration Permit Location Map

5 GEOLOGY

5.1 REGIONAL STRATIGRAPHY

The region surrounding Lavras do Sul consists of geologic domains within the Sul-rio-grandense Shield, a major lithotectonic assemblage of southernmost Brazil, which includes Paleoproterozoic basement and Neoproterozoic orogenic belts linked to the Brasiliano/Pan-African cycle (Figure 5-1).

The Três Estradas project is situated in the Santa Maria Chico Granulitic Complex (SMCGC), part of the Taquarembó domain. The SMCGC exposes the deepest structural levels within Brazil, and may represent the western edge of the Precambrian Rio de la Plata Craton. The granulite complex is bounded to the northeast by the Ibaré Lineament, to the west by Phanerozoic cover, and to the south by Neoproterozoic Braziliano granites (potential melts of the granulite). The age of the granulite protolith is late Archean to early Paleoproterozoic (ca. 2.5-2.3 Ga), and can therefore be interpreted as basement to the Taquarembó domain, and as an extension of the Valentines-Rivera Granulitic Complex within bordering Uruguay.

The granulitic complex and post-tectonic granites are largely surrounded by volcanic and sedimentary cover rocks of the Camaquã Basin. These rocks were deposited as a result of Neoproterozoic to Early Cambrian post-orogenic extension. The Joca Tavares project is located in a shallow intrusion within the Arroio-Marmeliero Formation of the Camaquã Basin. The formation is a metasedimentary sequence of clastic and carbonaceous rocks.

5.2 TRÊS ESTRADAS

The Três Estradas project area is situated in the SMCGC, south of the northwest trending Ibaré Lineament (Figure 5-2). The area is characterized by Late Archean to Early Proterozoic rocks of the granulite complex, and Neoproterozic felsic intrusive and sedimentary rocks of the Camaquã basin. The area has undergone amphibolite grade metamorphism and significant deformation throughout and following the emplacement of the granulite complex. This was followed by felsic intrusions and deposition of cover rocks during the formation of the Camaqua Basin during the Neoproterozoic and into the early Cambrian. The dominant rock types found within the local confines of the Três Estradas project include:

- Intermediate gneiss, amphibolite, schist, and metatonalite of the SMCGC. These lithologies have been strongly deformed and metamorphosed to amphibolite assemblages. They are interpreted to have experienced deformation during at least two tectonic events during the Paleo and Neoproterozoic, and subsequently have been affected by retrograde amphibolite metamorphism;

- Granites belonging to the São Gabriel Domain. Granites from this domain are poorly exposed. Where exposed the granites show little evidence of deformation, though extensive quartz veins trending parallel to the Cerro dos Cabritos Fault are common where in the contact with gneiss of the SMCGC;

- The Três Estradas meta-carbonatite. The meta-carbonatite is intensely recrystallized and metamorphosed to amphibolite assemblages. The carbonatite intrusion is characterized by three magmatic phases: apatite bearing pyroxenite, carbonatite, and syenite;

- Medium to coarse grained, subangular to subrounded poorly sorted, white to grey sandstone of the Maricá Formation, a component of the Camaquã Basin sedimentary cover units. This unit is characterized by cross bedding, lenses of polymictic conglomerates, and rhythmites associated with sandy to pelitic turbidites; and

- Quartz veins are common and are both concordant and crosscutting all lithologies. The veins can reach widths of up to 30m and can reach strike extents of up to 300m.

The majority of the Três Estradas phosphate project area is composed of the major rock types described above. The targeted area consists of an elongated carbonatite intrusion with a strike of 50 to 60 degrees, similar to that of the Cerro dos Cabritos Fault. Shear sense indicators suggest a sinistral sense of motion along this fault. The carbonatite, plunges steeply from 70° to vertical (90°) towards the northwest. The surface expression of the intrusion is approximately 2.5km along strike with a width of approximately 300m.

With the exception of meta-syenite along its northeast and southeast boundaries, the carbonatite is surrounded by biotite gneiss of the SMCGC. The carbonatite is tightly folded and strongly foliated, resulting in a well-developed gneissic texture. Locally, abundant subparallel quartz veins are present, resulting in elevated topographic ridges as the quartz is more resistant to weathering than the surrounding country rock. These veins range from a few centimeters to a couple of meters in width, and can be up to

300 meters long. Also flanking the carbonatite is a minor unit of meta-tonalite with intercalated meta-carbonatite and amphibolite. The unit is characterized by gneissic banding, a gray-green color on weathered surfaces, and a recrystallized granular texture.

The carbonatite intrusion is characterized by varying amounts of amphibolite. Amphibolite and carbonatite bands alternate on a meter- to millimeter-scale. Phosphate mineralization is disseminated and contained in apatite crystals throughout the carbonatite intrusion and in the overlying saprolite (discussed in detail in following section). Aguia's current interpretation suggests that the carbonatitic intrusion is formed from three magmatic phases that were later metamorphosed to an amphibolite assemblage.

5.3 JOCA TAVARES

The Joca Tavares carbonatite has intruded through sediments belonging to the Arroio-Marmeleiro Formation (Figure 5.3). The carbonatite along with Kimberlite breccias have intruded along a 40° - 50° trending lineament. The carbonatite is developed on the northeast end of the magnetic anomaly with the Kimberlite breccias extending southwest from the carbonatite. The carbonatite is in direct contact with siltstones and sandstones of the Arroio-Marmeliero Formation without signs of significant contact metamorphism. Occurrences of fenite are found a short distance south and southwest of the carbonatite and also underneath the carbonatite.

The carbonatite forms the top of a small gentile hill denoted by lush arboreal vegetation on top of the intrusion while the rest of the surrounding landscape is comprised of grasslands. The main carbonatite body has an ovate surface expression of approximately 350m in the east-west direction by 250m in the north-direction. Carbonatitic breccia forms a rim along the west and south sides of the main carbonatite body

The carbonatite is generally a fine-grained rock with a hypidiomorphic texture. Apatite occurs as small subhedral to euhedral crystals in a carbonate groundmass. Carbonate is primarily dolomite ($Ca,Mg(CaCO_3)_2$) and accounts for approximately 90% of the groundmass, followed by opaque minerals (magnetite, hematite, etc.) at 8%, and apatite at 2%. The light brown to pinkish color of the rock is attributed to limonite alteration in the groundmass from oxidation and weathering of magnetite.

Phosphate mineralization, occurring as the mineral apatite ($Ca_5(PO_4)_3(F,Cl,OH)$) is the primary mineralization of economic interest at Três Estradas and Joca Tavares. Apatite is the only phosphate-bearing mineral occurring in the carbonatites. At Três

Estradas phosphate mineralization occurs in both fresh and weathered meta-carbonatite and amphibolite. It also occurs as secondary mineralization in the saprolite directly overlying the meta-carbonatite and amphibolite. At Joca Tavares apatite is found disseminated throughout the carbonatite and in saprolite directly above the carbonatite.

Apatite is a common accessory mineral in carbonatite and ultramafic igneous deposits. With both deposits apatite forms submillimeter sized, subhedral to euhedral crystals disseminated throughout the groundmass. Apatite crystals are pale in color making them difficult to observe in fresh rock. In weathered rock, apatite is resistive to weathering relative to the carbonate matrix, making then easier to identify with a hand lens.

Carbonatites are typically complex, multi-phase intrusions with subsequent phases showing signs of fractionation. Apatite along with anatase and magnetite tends to be dominant in early phases of an intrusion while later phases of intrusion tend to be dominated by higher concentrations of niobium and rare-earth elements. Aguia geologists have noted up to three distinct phases within the cores of Três Estradas. The carbonatite at Joca Tavares is also a multi-phase intrusion.

5.4 DEPOSIT TYPES

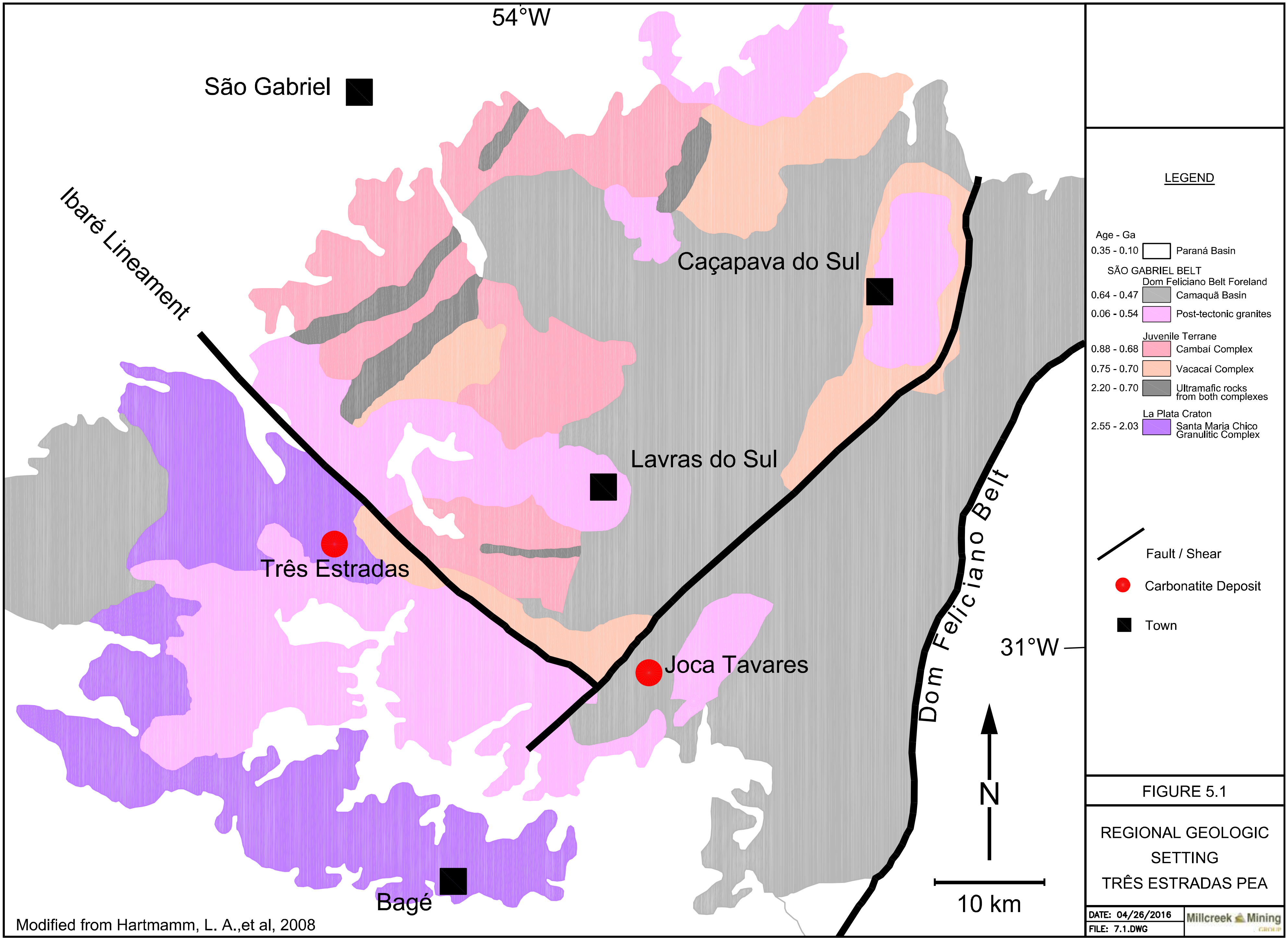
Phosphate is an important raw material that is used primarily for the production of fertilizers and for a variety of industrial applications. It occurs in both sedimentary and igneous deposits. In both types of deposits, the primary phosphate mineral is apatite. In igneous rocks appreciable quantities are most commonly found in layered mafic intrusions and carbonatite complexes. Três Estradas and Joca Tavares are both carbonatite intrusions. Carbonatite melts contain at least 50% carbonate by volume, rich in calcium, magnesium, iron and/or sodium and form as a result of fractional crystallization from silicate and carbonate-rich source rocks and/or through carbon dioxide degassing in the presence of calcium and magnesium. Carbonatite intrusions are often complex bodies formed from multiple intrusive phases, and are typically small in size, with dimensions ranging from 1.5 to 2 km (Biondi, 2003). Carbonatites are often associated with ultramafic complexes in cratonic regions. The magma uses deep fractures as a conduit for emplacement. In alkaline-carbonatitic ultramafic complex the first products are alkaline-ultramafic rocks and the carbonatite rock corresponds to final phase of magma crystallization.

Carbonatite intrusions typically fall into two morphological classes: 1) central or dome type intrusions; and 2) linear type intrusions. Central-type carbonatites typically form in regions of tectonic and magmatic reactivation in stable cratons or platform regimes.

They tend to be shallow seated events with high energy and are often the final fractionate of a larger alkalic intrusion. Central-type carbonatites have occurred throughout geologic history. Linear-type carbonatites are predominantly Paleoproterozic, preferential to deep faults, and are typically not linked by magmatic differentiation to ultramafic rocks like central-type carbonatites.

Brazil hosts some of the best-known mineralized carbonatites in the world. Well known examples include Araxá - Minas Gerais, Catalão - Goiás, Cajati - São Paulo, and Tapira - Minas Gerais. All of these have an early Cretaceous to Eocene age range and are developed along the margins of the Parana Basin. The geometry and physical characteristics of Joca Tavares indicates it is a central-type carbonatite with a probable age similar to the other central-type carbonatites in Brazil. Três Estradas is a linear-type carbonatite and is one of only two known linear-type carbonatite complexes known in Brazil.

The vast majority of Brazil's phosphate production is derived from the mining of carbonatite bodies and their near surface weathered products (Biondi, 2003).


54°W
São Gabriel
Ibaré Lineament
Caçapava do Sul
Lavras do Sul
Três Estradas
Joca Tavares
Bagé
Dom Feliciano Belt
31°W
N
10 km
Modified from Hartmamm, L. A.,et al, 2008
LEGEND
Age - Ga
0.35 - 0.10 Paraná Basin
SÃO GABRIEL BELT
Dom Feliciano Belt Foreland
0.64 - 0.47 Camaquã Basin
0.06 - 0.54 Post-tectonic granites
Juvenile Terrane
0.88 - 0.68 Cambaí Complex
0.75 - 0.70 Vacacaí Complex
2.20 - 0.70 Ultramafic rocks from both complexes
La Plata Craton
2.55 - 2.03 Santa Maria Chico Granulitic Complex
Fault / Shear
Carbonatite Deposit
Town
FIGURE 5.1
REGIONAL GEOLOGIC SETTING
TRÊS ESTRADAS PEA
DATE: 04/26/2016
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Millcreek Mining

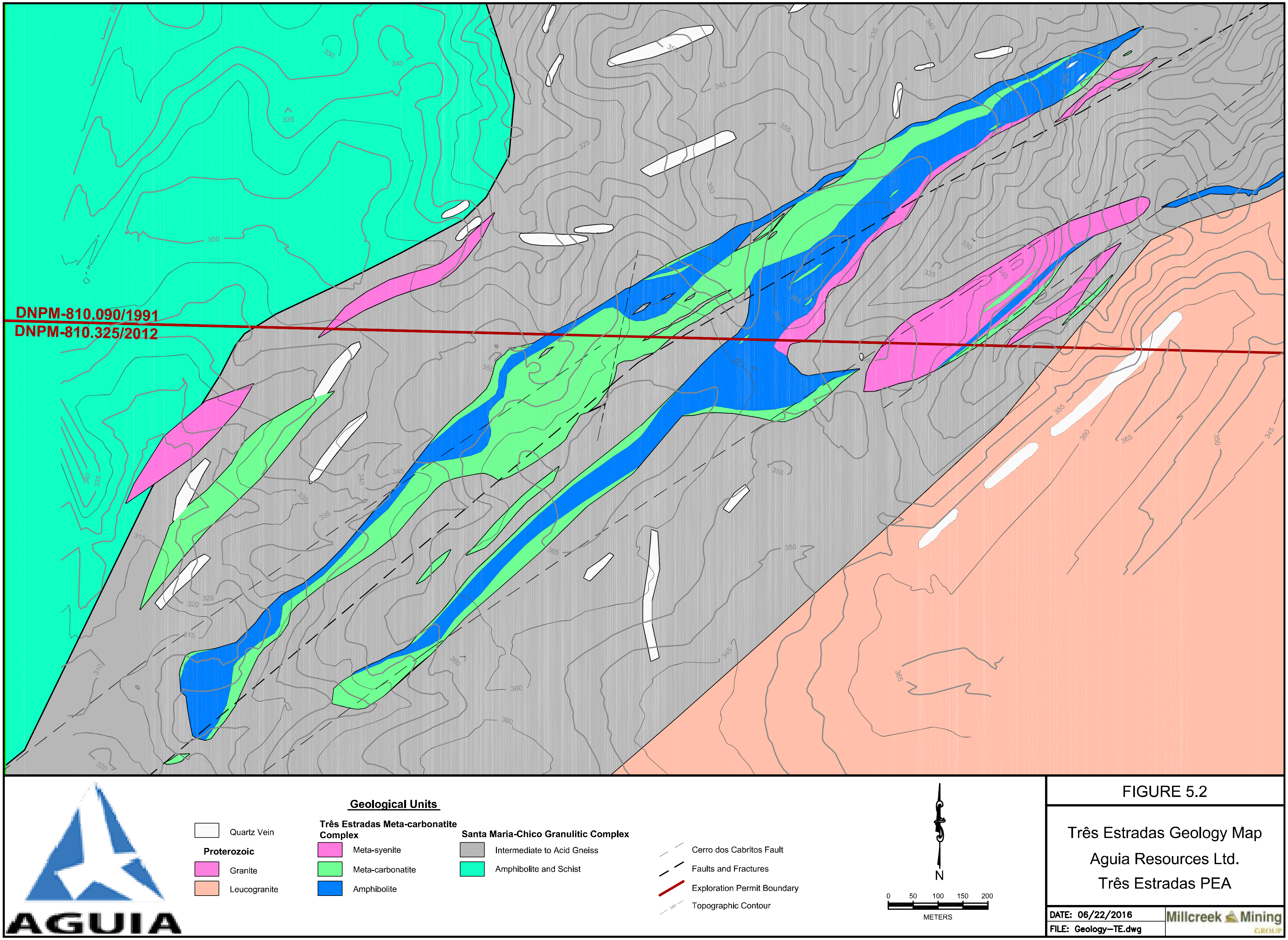

FIGURE 5.2

Três Estradas Geology Map
Aguia Resources Ltd.
Três Estradas PEA

DATE: 06/22/2016
FILE: Geology–TE.dwg

Millcreek Mining Group

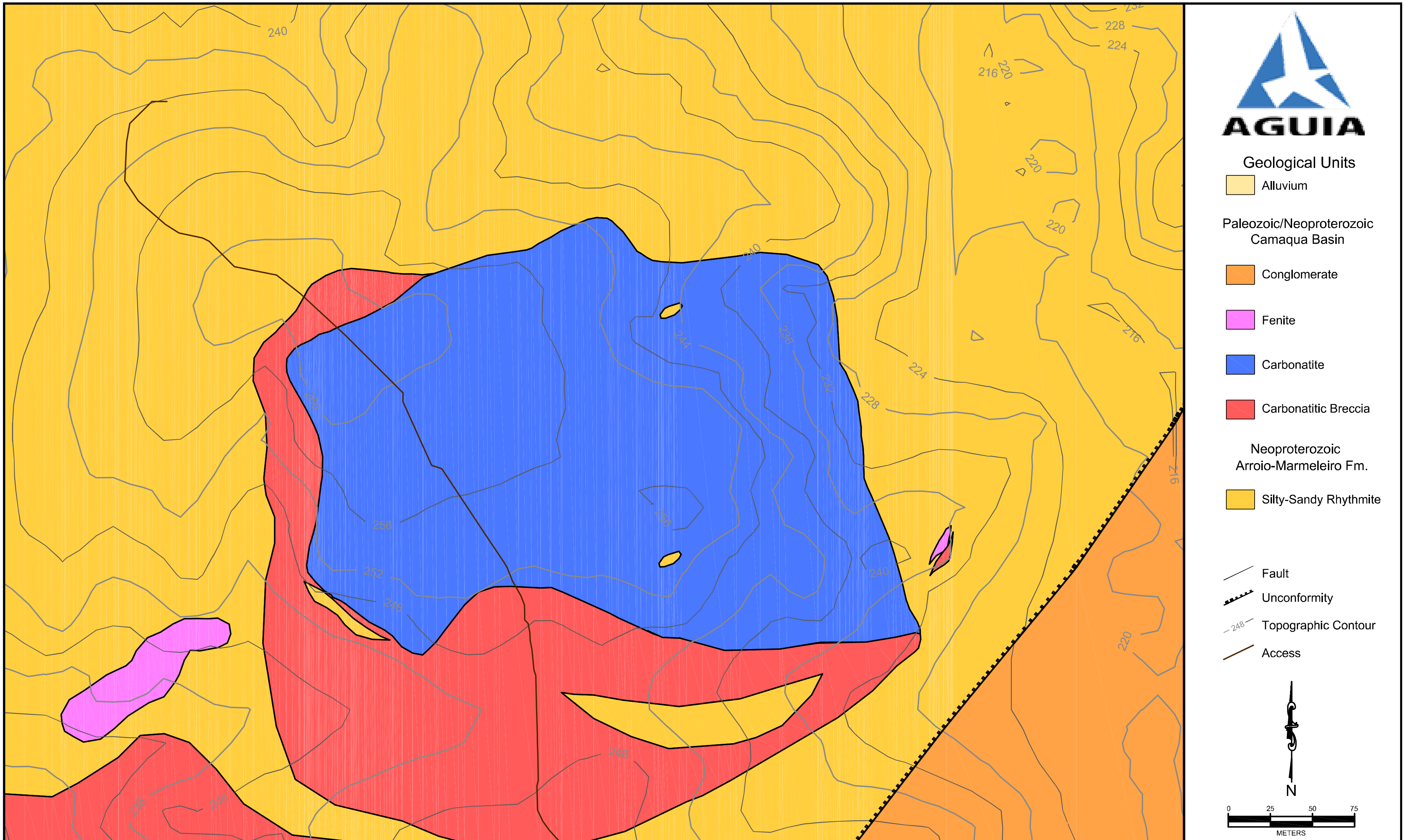

FIGURE 5.3

Joca Tavares Geology Map
Aguia Resources Ltd.
Três Estradas PEA

DATE: 06/22/2016
FILE: JT–Geology.dwg

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6 EXPLORATION AND DRILLING

Aguia has been diligent following a systematic approach in its exploration programs for Três Estradas and Joca Tavares.

6.1 EXPLORATION, TRÊS ESTRADAS

6.1.1 Geological Mapping

The geological mapping of the three exploration permits was executed by Aguia geologists on a scale of 1:10,000. Mapping was performed along north-south profiles at intervals of 100 m. Within the area surrounding the meta-carbonatite, geologic mapping was completed at a scale of 1:1.000. Detailed mapping of the carbonatite complex was completed at a scale of 1:200.

6.1.2 Topography

In March 2012, Aguia commissioned a detailed topographic survey of the meta-carbonatite area using differential GPS technology. The survey was carried out by Planageo – Serviços e Consultoria Ltda., from Caçapava do Sul, RS, Brazil. The survey comprised 35.35 line kilometers, consisting of survey lines spaced 25 m apart, and control lines spaced 100 m apart. In addition, relief points between the lines, borehole collars, and auger borehole collars from the first exploration campaign were used to build the topography. The topographic survey generated contour lines at 1-meter intervals in the meta-carbonatite area. Contour lines at 5-meter intervals were obtained for the remaining area using shuttle radar topography mission (SRTM) and orthorectified Geoeye images with 0.5 meter resolution.

6.1.3 Remote Sensing

Images from Landsat 7, sensor ETM+ and Geoeye-1 satellites were used to help in the geological interpretation and in the understanding of physiographic and infrastructure aspects.

6.1.4 Soil Geochemistry

Aguia in a partnership with CBC executed a soil sampling program in the northern portion of the meta-carbonatite exposure. The program covered a small area of the meta-carbonatite along the southern edge of DNPM # 810.090/91 to complement the historical soil sampling completed by Santa Elina. Soil samples were collected every 25 meters along lines spaced 100 meters apart, for a total of 52 soil samples.

Results of the both soil sampling programs were used to delimit P_2O_5 anomalies in a northeast direction following the Cerro dos Cabritos Fault, to test for a continuation of the meta-carbonatite in that direction. Values higher than 1.42% P_2O_5 were considered first order anomalies and values between 0.83% and 1.42% P_2O_5, were considered second order anomalies.

6.1.5 Rock Geochemistry

A total of 77 rock samples have been collected from within the project area. The majority of these samples represent meta-carbonatite. Assay results yielded up to 32% P_2O_5 within the meta-carbonatite. Fresh or weathered carbonatite yielded mean values of 4% to 5% P_2O_5. Gneiss and meta-syenite rocks within the area did not return any significant P_2O_5 grades. Few results are available from the amphibolite unit, as outcrops are scarce in the area.

6.1.6 Trenching

One historical trench exists on the tenement, cut perpendicular to the meta-carbonatite. According to Aguia, this trench was dug over 10 years ago by Santa Elina while prospecting for gold in the area. Within the trench, Aguia sampled three vertical channels; in each channel, two samples were collected from bottom to top. The P_2O_5 results from these samples vary from 24.10% to 28.80%.

6.1.7 Geophysical Surveys

Aguia made use of data from an airborne geophysical survey completed by CPRM. Using rectified imagery for Total Magnetic Field (TMF), signal amplitude of TMF, First Derivative of the TMF, Uranium Concentration, and Total Count of Gamma spectrometry. The magnetic anomalies identified in the airborne survey assisted in delineating areas of interest and led to Aguia completing a ground-based magnetic survey over the entire northern tenement area in March 2012. The survey was carried out by AFC Geofísica Ltda., from Porto Alegre, Brazil. The survey comprised 104 line kilometers oriented north-south. Survey lines and control lines were spaced at 25m and 100 m apart, respectively.

6.2 EXPLORATION, JOCA TAVARES

6.2.1 Geological Mapping

Geologic mapping was carried out by Aguia geologists at a scale of 1:5,000.

6.2.2 Topography

In March 2016, Aguia commissioned a detailed topographic survey of the carbonatite area using differential GPS technology. The survey was carried out by Planageo – Serviços e Consultoria Ltda., from Caçapava do Sul, RS, Brazil. The survey comprised 35.35 line kilometers, consisting of survey lines spaced 25 meters apart, and control lines spaced 100 meters apart. In addition, relief points between the lines, borehole collars, and auger borehole collars from the first exploration campaign were used to build the topography. The topographic survey generated contour lines at 1-meter intervals in the meta-carbonatite area. Contour lines at 5-meter intervals were obtained for the remaining area using SRTM and ortho-rectified Geoeye images with 0.5 meter resolution.

6.2.3 Soil Geochemistry

Soil samples were collected from a 200m X 25m grid oriented over the south-central portion of the exploration permit and completely cover the carbonatite and kimberlite breccias outcropping to the southwest of the carbonatite. A total of 457 soil samples were collected and shipped to ALS Brazil Ltda. Anomalous P_2O_5 values were returned in soil samples for both kimberlite breccia and carbonatite. Carbonatite values were stronger with the highest value returned at 13.65% P_2O_5.

6.2.4 Rock Geochemistry

A total of 111 rock samples were collected within the exploration permit. Sampling was done on a variety of lithologies including carbonatite, phosphatic siltstone and shale, lithic sandstone, and arkose. Values were obtained up to 12.45% P_2O_5 in the carbonatites.

6.2.5 Geophysical Survey

Aguia made use of data from an airborne geophysical survey completed by CPRM. Using rectified imagery for TMF, signal amplitude of TMF, First Derivative of the TMF, Uranium Concentration, and Total Count of Gamma-spectrometry. The magnetic anomalies identified in the airborne survey assisted in delineating areas of interest and led to Aguia completing a ground-based magnetic survey over the entire northern tenement area in March 2012. The survey was carried out by AFC Geofísica Ltda. The survey comprised 50.4 line kilometers oriented on 28 north-south lines spaced 100m apart with readings collected on 25 meter intervals.

6.3 DRILLING

6.3.1 Três Estradas

Aguia has completed four drilling campaigns on the Três Estradas area between 2011 and 2015. Drilling has included 78 core holes (10,801.45m), 154 reverse circulation (RC) holes (3,304.0m), and 487 auger holes (2,481.65m). Table 6.1 presents a summary of Aguia's drilling activities at Três Estradas. A complete listing of drill holes is provided in Appendix B. Drill hole locations are shown in Figure 6.1. It should be noted that only data from the core and RC drilling has been used in developing the resource model.

Table 6-1 Summary of Drilling at Três Estradas

Company	Drilling Campaign	Time Period	Type	No. of Holes	Total Length (m)
Aguia Resources Ltd.	1	Oct - Nov 2011	Core	19	1,317.15
			Auger	26	169.90
	2	Jul - Oct 2012	Core	21	4,016.75
			Auger	158	994.65
			RC	105	2,151.00
	3	Nov 2014 - Jan 2015	Core	20	3,272.90
			RC	49	1,153.00
			Auger	203	818.70
	4	Oct - Dec 2015	Core	18	2,194.65
			Auger	100	498.40
			Total	**719**	**16,587.10**

6.3.2 Joca Tavares

Drilling at the Joca Tavares Project was initiated with auger drilling that began in March of 2013 and was completed in May of 2015. Eighty-nine (89) auger holes were completed at Joca Tavares. Aguia completed a 40-hole core drilling program at Joca Tavares between October and December, 2015. Table 6.2 presents a summary of Aguia's drilling activities at Joca Tavares. A complete listing of drill holes is provided in Appendix B. Drilling locations are shown in Figure 6.2. Only data from the core drilling has been used in developing the resource model for Joca Tavares.

Table 6-2 Summary of Drilling at Joca Tavares

Company	Time Period	Type	No. of Holes	Total Length (m)
Aguia Resources Ltd.	Oct. - Dec. 2015	Core	40	2,305.90
	May 2013 - Mar. 2015	Auger	89	359.65

6.4 PROCEDURES, SAMPLING METHOD AND APPROACH

Aguia used REDE Engenharia e Sondagens S.A. (REDE) to complete all core drilling in the four drilling campaigns at Três Estradas. Layne Drilling completed the core drilling at Joca Tavares. Auger drilling was completed by Aguia personnel and RC drilling was undertaken by Geosedna Perfurações Especiais S.A. (Geosedna). All drill collars are surveyed using differential GPS both before and after drill hole completion. Coordinates are recorded in Universal Transverse Mercator (UTM) using the SAD69 Datum. Três Estradas is located in Zone 21S and Joca Tavares is located in Zone 22S.

Following completion of a drill hole, collar locations are marked by concrete markers with an embedded plastic collar pipe and an aluminum tag identifying drill hole ID, UTM coordinates, azimuth, dip, and penetration depth. All core and RC drill collars are marked by concrete markers as shown in Figure 6.3.

6.4.1 Core Drilling

All core holes were drilled using wireline coring methods. HQ size (63.5mm diameter core) core tools were used for drilling through weathered material and NQ size (47.6mm diameter core) tools were used for drilling through fresh rock. Core recovery has exceeded 90% in 97% of all core holes.

All core holes have been drilled as angle holes with dip angles ranging from -45° to -75°, with the majority drilled at -60°. The vast majority of core holes have been drilled with an azimuth bearing of 150°. Eleven of the core holes were drilled at a 330° azimuth. Beginning in the second drilling campaign at Três Estradas, down hole surveys were completed on core holes using a Maxibore down-hole survey tool. Readings are collected on three-meter intervals. A total of 55 core holes have received down-hole surveys at Três Estradas.

At Joca Tavares, 29 of the 40 core holes were drilled vertically (-90°). The remaining 11 holes were drilled at various azimuth bearings inclined at dips ranging from -50° to -70°. Maxibore surveys were completed for seven of the inclined holes.

6.4.2 RC Drilling

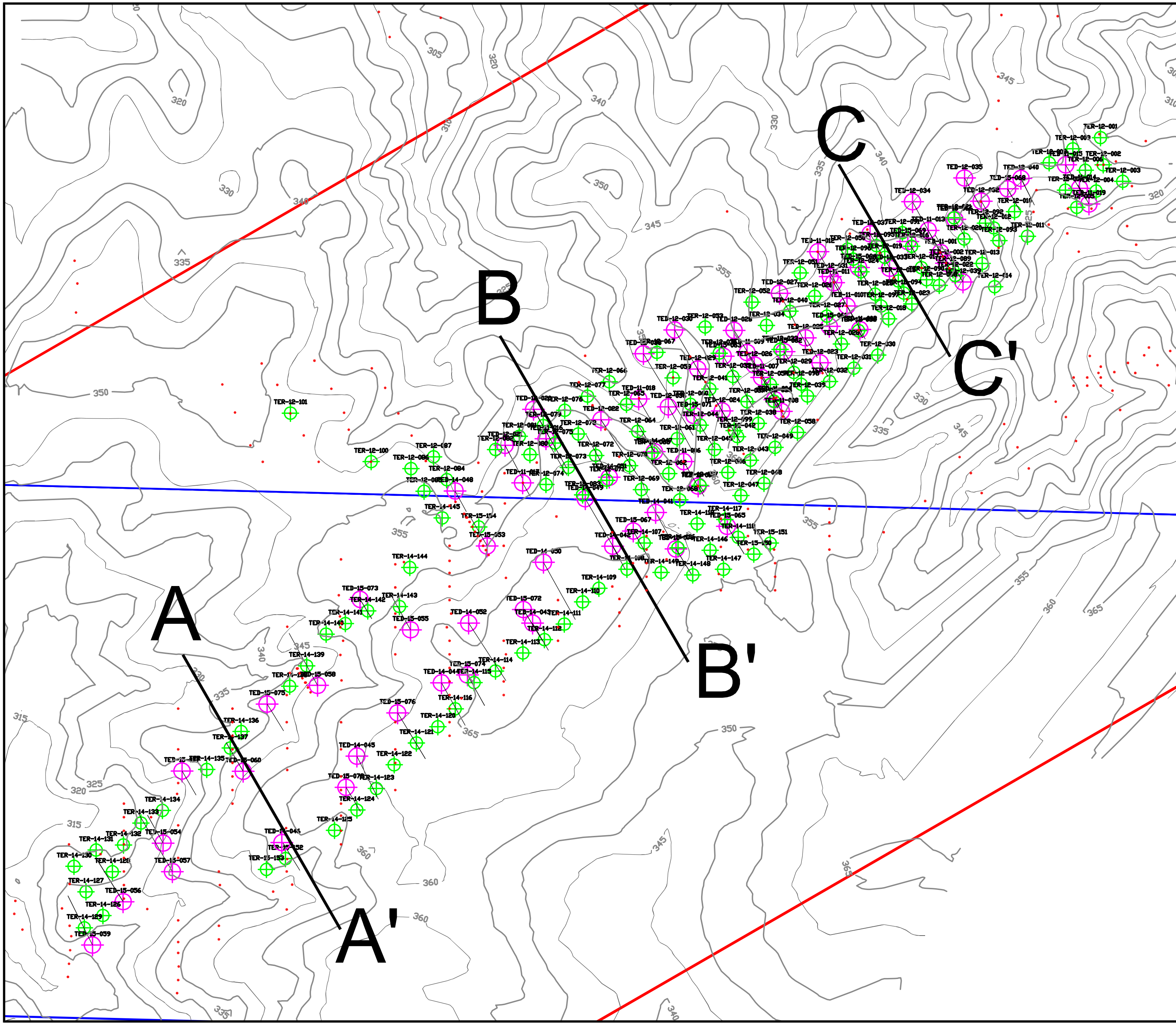
RC drilling was used to complete 154 holes with a cumulative length of 3,304m. All RC holes were drilled vertically (-90°) using 140mm button hammer bit. Holes were primarily drilled dry.

6.4.3 Auger Drilling

Auger drilling was completed by Aguia personnel testing the extents of mineralization in the overlying saprolites, Auger holes were drilled to a maximum depth of 15m. Two tipper scarifier motorized augers were used to drill the auger holes.

6.5 COMMENTS ON DRILLING

Aguia has followed standard practices in their core, RC, and auger drilling programs. They have followed a set of standard procedures in collecting cuttings and core samples, logging, and data acquisition for the project. Their procedures are well documented and meet generally recognized industry standards and practices. Millcreek considers the exploration data collected by Aguia are of sufficient quality to support mineral resource evaluation.



AGUIA

License Boundary
Model Area
Core Drillhole
RC Drillhole
Auger Drillhole
Drillhole Trace
Topography Contour

N

0 50 100 150 200
METERS

FIGURE 6.1

Drill Hole Location Map
Aguia Resources Ltd.
Três Estradas PEA

DATE: 06/06/2016
FILE: Figures-TE.dwg
Millcreek Mining GROUP

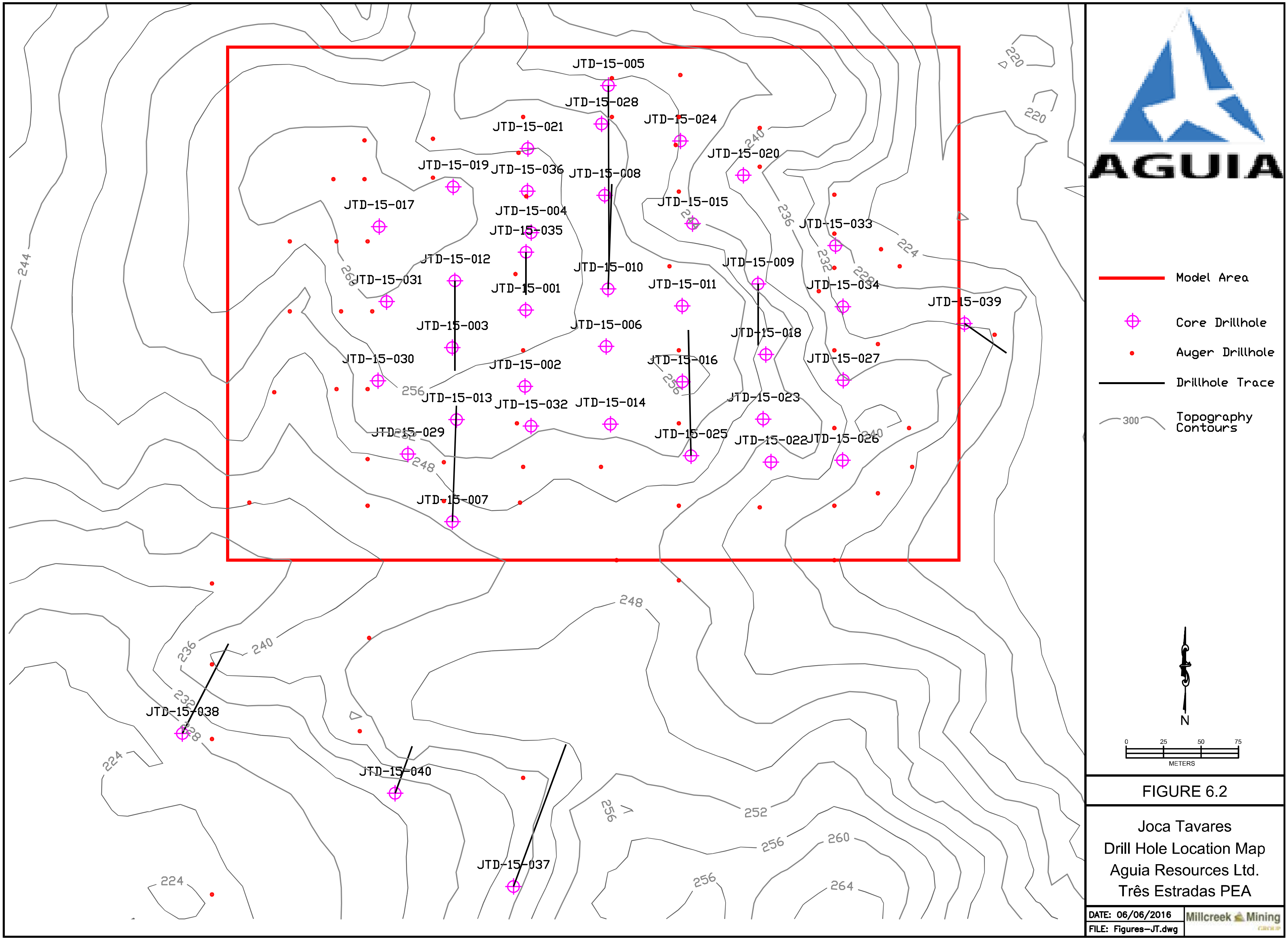
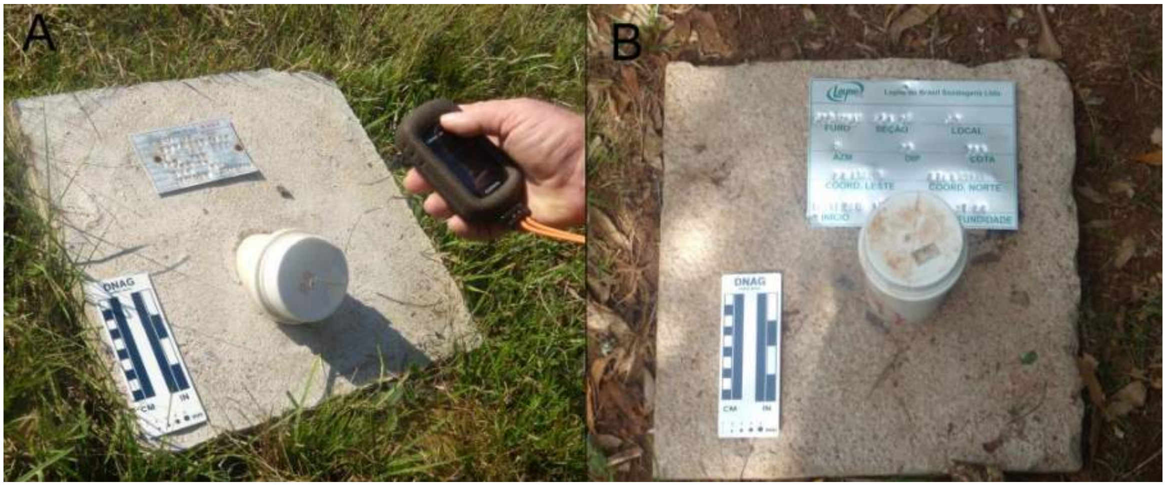


FIGURE 6.2

Joca Tavares
Drill Hole Location Map
Aguia Resources Ltd.
Três Estradas PEA

Figure 6-3, Concrete Markers Used to Identify Drill Hole Collars: A) Três Estradas Core Hole; B) Joca Tavares Core Hole



7 SAMPLING, ANALYSES AND DATA VERIFICATION

Aguia has followed standard practices in their geochemical surveys, core, RC, and auger drilling programs. They have followed a set of standard procedures in collecting cuttings and core samples, logging, and data acquisition for the project. Their procedures are well documented and meet generally recognized industry standards and practices. Millcreek considers the exploration data collected by Aguia are of sufficient quality to support mineral resource evaluation.

7.1 Sampling Method and Approach

All core and drilling samples are transported from the project sites to Aguia's sample storage and preparation facility in Lavras do Sul.

7.1.1 Core Drilling

All core logging is completed by Aguia geologists and directly entered into a comprehensive database program. Aguia's geologists are responsible for identifying and marking core intervals for sampling. Sample intervals range in length from 0.15m to 6.20m with 90% of all core samples falling within the range of 0.8m to 1.2m. Aguia's procedures for the sampling of core drill holes were as follows:

- The driller and/or driller's helper removes the core from the core barrel and places the core in the core tray;
- Core depths, core cut, and recovery measurements are confirmed;
- Core is gently washed and rinsed of drilling muds and fluids with clean water;
- Core is then transferred to standard wooden core boxes;
- Core boxes are labeled with a metal tag denoting hole ID, box number, and depth intervals. Depth markers are inserted in the core boxes marking the depths at the start and end of each core run.
- Core is transferred at routine intervals by Aguia personnel from the drill site to the sample storage and preparation facility in Lavras do Sul.
- One sampling card is completed for each sample. The sampling cards have two detachable tags that are used further in the sampling process. One tag is inserted in the core box in the interval that has been sampled and the second tag is inserted into the sample bag together with the sample;

- Each sample is assigned a unique sample number that allows it to be traced through the sampling and analytical procedures, and for validation against the original sample site;
- Three readings per metre are performed with a portable x-ray fluorescence (XRF) analyzer; each set of readings are averaged to produce a semi-quantitative P_2O_5 log. This log is referenced to ensure the proper insertion of control samples. This procedure was used during the first drilling campaign at Três Estradas and from the beginning of the second drilling campaign until the drilling of Borehole TED-12-027. This procedure was abandoned with subsequent holes at Três Estradas and was not applied to core at Joca Tavares.
- A photographic record is maintained of all core boxes with each photograph recording three boxes;
- Detailed geological logs are completed for every core hole using an appropriate logging form;
- Sampling intervals in the amphibolite and the carbonatite are typically targeted for a 1.0m length but may fall within a range of 0.50m to 1.50m. Samples in the un-mineralized gneiss host rock may have considerably longer lengths of up to 6.2m.
- For the weathered material, a spatula or a machete is used to split the sample into two subsamples along the core axis;
- Fresh core is split lengthwise using a core saw;
- Samples are systematically taken using the right half of the core, returning the left half core to the core box for archival storage. One paper tag with the sample number is inserted in the core box with the remaining left half-core to register the sampling interval;
- Samples are then packed in plastic bags and a second paper tag with the sample number is inserted into the bag for identification;
- Blanks and standards are inserted systematically;
- A geologist determines the number of standards and blanks to be sent to the laboratories by reviewing the sampling cards and sample bags);
- Archived core is stored in Aguia's facility in Lavras do Sul. All sample pulps and rejects returned from the laboratory are subsequently returned for storage in Lavras do Sul.
- Digital and hard copies of all sampling and shipment documentation are stored in the project office at Lavras do Sul. Documentation includes: geological logs, core

photographs, core recovery records, portable XRF readings, and down-hole surveys.

7.1.2 RC Drilling

The sampling procedures for RC drilling are as follows:

- The sequential distribution of samples, as well as the sampled interval, are checked;
- Moist samples are split using a plastic liner and a metal cross-blade device. Saturated samples are dried before being homogenized;
- Dry samples are split using a Jones riffle splitter;
- Every metre drilled produces two aliquots with a minimum weight of 500g and a maximum of 2 kg. The two aliquots are identified as “archive” and “analysis”; and
- The “archive” samples are identified by hole ID and the sampling interval. The “analysis” samples are identified by hole ID, sample interval, and an assigned sample number.

7.1.3 Auger Drilling

Auger sampling procedures are as follows:

- The first 20 centimeters of cuttings are discarded;
- Samples are taken at one-meter increments;
- Sample cuttings are transferred from the auger to a plastic box and then to a large plastic sheet;
- On the plastic sheet any large pieces of sample material are manually broken apart;
- Two technicians then shake the contents on the plastic sheet in a rolling motion to homogenize and blend the sample cuttings;
- After homogenizing the cuttings, approximately 2kg of sample material is collected from the sample mound and labeled with auger borehole ID and depth interval;
- Throughout the drilling, a representative piece of rock is collected and stored at 1-meter intervals. These samples are analyzed for phosphorus, calcium, and aluminum content using a portable XRF analyzer. For every 30 readings, two standard certified materials (samples GRE-03, GRE-04) and a blank certified

material are analyzed. During each stage of the field sample preparation, a small sample is taken and archived in a purpose-build box for geological logging and for later reference;

- The portable XRF is used to screen samples for further testing at the analytical laboratory. Samples yielding greater than 1.31% phosphorus (equivalent to 3% P_2O_5), are forwarded on to the analytical laboratory, Samples yielding less than 1.31% Phosphorous are placed in storage.
- Certified reference samples are inserted with every 20 samples followed by a fine and coarse blank sample. Blanks were also inserted at the end of mineralized intervals;
- A batch of samples for shipment can contain samples from more than one auger borehole, However, all samples from an individual auger borehole are shipped within the same batch to the laboratory; and
- Samples were shipped to the ALS or SGS laboratories, in Vespasiano, MG, Brazil in plastic bags, and are labeled with the sample identification along with another label provided in a small plastic bag.

7.1.4 Sample Dispatch

Samples from drilling were transported from Lavras do Sul to Bage, RS by Aguia personnel using Aguia vehicles. From Bage, samples were transported by a commercial carrier, TNT Mercurio, to Belo Horizonte, MG. In Belo Horizonte, a dispatcher is responsible for transporting samples to the appropriate testing facility.

7.2 Sampling Analyses

From the start of exploration activities up through October, 2012, ALS Laboratory in Vespasiano, MG was the primary facility used for analysis of soil, rock and drilling samples. After October, 2012 all subsequent samples from Três Estradas and Joca Tavares were sent to SGS Geosol, also in Vespasiano, as the primary analytical laboratory.

The ALS laboratory in Vespasiano is primarily an intake and preparation facility. Samples are crushed and pulverized into rejects and pulps and entered into the ALS tracking system before being forwarded to ALS Peru S.A., in Lima or ALS Minerals in North Vancouver, Canada. The Vespasiano facility is not specifically accredited, but operates as part of the ALS Group whose management system is consistent with ISO 9001:2008 requirements. Both the Lima and North Vancouver facilities have ISO/IEC17025:2005 accreditation through the Standards Council of Canada. ALS is not specifically accredited for the methods used to analyze the samples submitted by Aguia.

The SGS Geosol laboratory is a full analytical facility. SGS Geosol is an internationally recognized minerals testing laboratory. Its management system is accredited to ISO 9001:2008 by ABS Quality Evaluation Inc., Texas, USA. SGS Geosol is not specifically accredited for the methods used to analyze the samples submitted by Aguia.

Aguia used blanks in the first drilling campaign that were prepared by Acme Analítica Laboratórios Ltda., in Aparecida de Goiânia, GO, Brazil, and analyzed and certified by Acme Analytical Laboratories S.A, in Santiago, Chile. Mechanical preparation of mineral samples in Aparecida de Goiania operates as part of a management system that fulfills the requirements of ISO 9001:2008. Acme Santiago is accredited under ISO/IEC 17025:2005 by the Standards Council of Canada (accredited laboratory no. 764). Acme is not accredited for the specific methods used to analyze the samples submitted by Aguia.

Aguia also commissioned two laboratories at the University of São Paulo (Technological Characterization Laboratory and Ore Treatment Research Group) to carry out a mineralogical characterization study and a beneficiation study. Though both labs are highly reputable research facilities, they have not undergone any accreditation programs common with commercial laboratories. At the University of São Paulo the mineralogical analysis included scanning electron microscope (SEM) with an energy dispersive spectrometer (EDS) and employed a mineral liberation analysis (MLA) routine.

Beneficiation studies were performed first at the Universitu of São Paulo (USP), but were also performed at SGS Lakefield, Canada that basically reproduced the USP results with slight improvements. Finally we have recent beneficiation work from Eriez USA, that are of outstanding quality.

7.2.1 Soil Samples

Soil samples were collected from the B Horizon of the soil profile. Sample locations were excavated completely to the base of the B Horizon before collecting a representative 2 kg sample. Both ALS and SGS were used for soil geochemistry. Since Três Estradas started out as a gold exploration play, samples were analyzed for gold using fire assay with an atomic absorption finish and a 31 element analytical package using inductively coupled plasma (ICP) spectrometry. Soil samples were sent for analysis to SGS Geosol in Belo Horizonte. Samples of 50 grams passing 80 mesh were analyzed for gold using fire assay with an atomic absorption finish, and for a suite of 31 elements using ICP.

7.2.2 Rock Samples

Rock samples were collected in order to represent every different lithology outcropping over the entire project area. All samples were analyzed using a portable XRF unit. Samples yielding more than 3% P_2O_5 were shipped to the laboratories (ALS and/or SGS Geosol) for preparation and assaying. Samples were weighed and dried to a maximum of 120 ^oC, and crushed to 70% passing a 2mm screen. A 250g split was then pulverized to 85 percent passing 75µm to produce the analytical pulp. Samples underwent two analytical procedures. XRF was used to determine major oxides: Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, MnO_2, Na_2O, P_2O_5, SiO_2, and TiO_2. XRF uses a sample fused with lithium metaborate. The loss on ignition (LOI) from the analysis is calculated from the difference in weight of a 1.0g sample prior and after placing the sample in an oven at 1,000 ^oC for one hour, then allowing the sample to cool. Samples were also analyzed for a suite of 31 minor, trace and rare-earth elements using an aqua regia digestion and ICP - Mass Spectrometry.

7.2.3 Auger, Core, and Reverse Circulation Samples

XRF analysis has been used to determine major oxide amounts on all auger, core, and RC samples following the same procedures outline above for rock samples. Sample pulps are fused with lithium metaborate and and analyzed by XRF for Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, MnO_2, Na_2O, P_2O_5, SiO_2, and TiO_2. All oxides are reported in weight percent. In addition, samples from the first phase of campaign of drilling at Três Estradas were also subjected to the 31 element ICP analysis.

7.2.4 Specific Gravity Measurements

During the first drilling campaign in 2011, the specific gravity of 48 core samples were measured by SGS Geosol using a standard weight in water and weight in air methodology. Uncut core segments of approximately 15 to 20 centimetre lengths were wrapped in PVC film and submerged in water. Aguia took over this testing with all subsequent drilling following the same procedures used by SGS Geolosol. To date, 3,045 specific gravity measurements have been determined for Três Estradas and 624 specific gravity measurements have been determined for Joca Tavares.

7.3 DATA VERIFICATION

The CPs completed site visits to the Três Estradas and Joca Tavares project sites on March 17, 18 and 19, 2016. The site visits confirmed the location and access routes of previous and current exploration activities. The CPs were able to visit outcrops hosting phosphate mineralization, see exposures of surrounding country rock, and visit numerous drill sites at both project areas. During our site visits photographs and GPS coordinates were taken at drill sites and outcrops that were later compared to coordinates in the drilling databases and maps provided by Aguia. The CPs also spent time at Aguia's core storage and logging facility in Lavras do Sul where they were able to examine drill core, review procedures used in logging, archiving information, density measurements, and sample preparation.

7.4 VERIFICATION OF CORE LOGS

During our site visit, Millcreek submitted a list of randomly selected core holes for Aguia to retrieve from storage for Millcreek to examine in detail. The list includes nine core holes from Três Estradas and six core holes from Joca Tavares. Table 7.1 provides a listing of core holes examined by Millcreek. The core storage and logging facility has a large viewing area outdoors, but under cover for viewing core that allowed the CPs to lay out core boxes for up to four complete core holes at a time for our examination. Cores were directly compared to the original logs prepared by Aguia geologists to verify intervals and measurements, lithologic, and alteration descriptions. Our detailed review of the core with logging records found no discrepancies. The logs Millcreek reviewed with the core show a good level of detail in the descriptions and consistency in nomenclature and terminology.

Table 7-1 Selected Core Holes for Detailed Examination

Três Estradas	Joca Tavares
TED-11-001	JTD-15-003
TED-11-002	JTD-15-009
TED-11-004	JTD-15-010
TED-11-006	JTD-15-012
TED-11-008	JTD-15-015
TED-12-024	JTD-15-020
TED-14-043	
TED-15-065	
TED-15-067	

7.5 DATABASE VERIFICATION

Millcreek completed a series or routine verifications to ensure reliability of the compiled databases provided by Aguia. This work including checking the compiled databases with assay certificates for both core and RC drill holes. Eight core holes and 19 RC holes from Três Estradas along with seven core holes from Joca Tavares were reviewed against the assay certificates. More than 12% of the drill holes and 11% of assays were audited against the laboratory assay certificates. Table 7.2 identifies the drill holes and number of samples audited against assay certificates.

Table 7-2 Database Verification Holes

Três Estradas			Joca Tavares
Core Holes	**RC Holes**		**Core Holes**
TED-11-015	TER-12-020	TER-12-074	JTD-15-003
TED-12-025	TER-12-024	TER-12-078	JTD-15-010
TED-12-033	TER-12-026	TER-12-088	JTD-15-016
TED-14-050	TER-12-031	TER-14-106	JTD-15-017
TED-15-054	TER-12-034	TER-14-117	JTD-15-020
TED-15-055	TER-12-037	TER-14-130	JTD-15-021
TED-15-068	TER-12-045	TER-14-136	JTD-15-034
TED-15-076	TER-12-059	TER-14-145	
	TER-12-062	TER-15-153	
	TER-12-064		

7.6 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

For quality assurance and quality control of analyses Aguia uses a combination of reference samples, blanks, duplicate samples, and umpire check assays. Aguia follows a protocol for accepting/refusing each batch of assays returned from the analytical laboratory:

- If a reference sample fails between 2 and 3 standard deviations and no other failure occurs in the batch, the batch is accepted.
- If a reference sample fails beyond 3 standard deviations the reference sample is classified as failure.
- If two or more reference samples fail between 2 and 3 standard deviations in a batch, the batch is deemed a failure.
- If both blank samples (coarse and fine) fail over the warning line, the batch is classified as a failure until the next blank sample sequence.
- If a duplicate sample exceeds 5% difference over the mean of the original and duplicate sample and no other failure occurs with other duplicates samples in the batch, then the batch is accepted.

Reference, blanks and duplicate samples were inserted into the stream of drill samples such that one in 20 samples was a reference sample, one in every 30 samples was a blank sample, and one in every 30 samples was a duplicate sample. Care has been taken in the sequencing to distribute references and blanks so that reference and blanks didn't immediately follow each other, though a coarse-grained blank does immediately precede a fine-grained blank to track carryover contamination. Tables 7.3 and 7.4 summarize the samples used to evaluate QA/QC of the drilling samples.

Table 7-3 Summary of Quality Control Samples for Três Estradas

Type		Core	%	RC	%	Total	%
Sample Assays		9,361	73.91	3,304	26.09	12,665	100.00
Reference Samples	GRE-3	15	0.16	104	3.15	119	0.94
	GRE-4	182	1.94	0	0.00	182	1.44
	ITAK-910	315	3.37	46	1.39	361	2.85
	ITAK-911	32	0.34	78	2.36	110	0.87
Blanks	Fine	263	2.81	100	3.03	363	2.87
	Coarse	266	2.84	101	3.06	367	2.90
Check Assays		343	3.66	210	6.36	553	4.37
Duplicates		385	4.11	180	5.45	565	4.46
Total QA/QC Samples						**2,620**	**20.69**

Table 7-4 Summary of Quality Control Samples for Joca Tavares

Type		Core	%
Sample Assays		1,740	100.00
Reference Samples	ITAK-910	81	4.66
	ITAK-911	14	0.80
Blanks	Fine	58	3.33
	Coarse	58	3.33
Check Assays		80	4.60
Duplicates		94	5.40
Total QA/QC Samples		**385**	**22.13**

7.6.1 Reference Samples

During the first two drilling campaigns at Três Estradas, Aguia used two certified control samples, GRE-3 and GRE-4, prepared by Geostats Pty. The reference samples were certified for phosphorous and several trace elements (P reported in ppm and converted to wt.% P_2O_5 by Aguia). The control samples are not certified for the other five oxides considered in the resource evaluation. ALS delivered consistent P_2O_5 results, mostly within two standard deviations, and always within three standard deviations. With all subsequent drilling at Três Estradas and Joca Tavares, Aguia had two samples prepared by Instituto de Technologia August Kekulé (ITAK) to be used as certified reference samples. Both samples were prepared from carbonatite material sourced from Três Estradas. Reference samples were inserted at regular intervals with each batch of samples sent to the laboratory. Table 7.5 and 7.6 summarizes the characteristics and analytical results for the reference samples utilized with the drilling at Três Estradas and Joca Tavares.

Table 7-5 Três Estradas Reference Samples

Reference Sample	GRE-3	GRE-4	ITAK-910						ITAK-911					
	P_2O_5	P_2O_5	P_2O_5	CaO	SiO_2	MgO	Al_2O_3	Fe_2O_3	P_2O_5	CaO	SiO_2	MgO	Al_2O_3	Fe_2O_3
Certified Value	15.23	6.19	4.42	39.70	7.71	6.10	1.27	6.92	11.06	18.52	26.64	5.67	5.40	19.44
Standard Deviation	0.08	0.03	0.10	0.67	0.08	0.10	0.05	0.12	0.18	0.28	0.21	0.10	0.20	0.13
Estimated Uncertainty	0.22	0.10	0.21	1.40	0.17	0.20	0.10	0.24	0.37	0.57	0.43	0.20	0.41	0.27
Sample Count	119	182	361	361	361	361	361	361	110	110	110	110	110	110
Average Value	15.02	6.09	4.40	40.02	7.66	6.95	1.25	6.96	10.83	18.48	26.40	5.59	5.23	19.20
Minimum	14.70	5.95	4.19	39.00	7.42	5.79	1.18	6.69	10.60	18.10	25.60	5.46	5.15	18.80
Maximum	15.55	6.45	4.62	42.30	8.00	7.94	1.36	7.43	11.10	18.80	26.80	5.82	5.35	19.60
Standard Deviation	0.16	0.08	0.06	0.48	0.10	0.82	0.03	0.12	0.10	0.15	0.25	0.08	0.05	0.23

Table 7-6 Joca Tavares Reference Samples

Reference Sample	ITAK-910						ITAK-911					
	P_2O_5	CaO	SiO_2	MgO	Al_2O_3	Fe_2O_3	P_2O_5	CaO	SiO_2	MgO	Al_2O_3	Fe_2O_3
Certified Value	4.42	39.70	7.71	6.10	1.27	6.92	11.06	18.52	26.64	5.67	5.40	19.44
Standard Deviation	0.10	0.67	0.08	0.10	0.05	0.12	0.18	0.28	0.21	0.10	0.20	0.13
Estimated Uncertainty	0.21	1.40	0.17	0.20	0.10	0.24	0.37	0.57	0.43	0.20	0.41	0.27
Sample Count	79	79	79	79	79	79	14	14	14	14	14	14
Average Value	4.39	39.82	7.65	6.07	1.26	6.99	10.85	18.43	26.40	5.58	5.23	19.48
Minimum	4.24	38.90	7.38	5.90	1.20	6.73	10.62	17.90	26.10	5.49	5.15	19.20
Maximum	4.52	40.70	7.85	6.28	1.45	7.23	11.07	18.80	26.80	5.71	5.33	19.80
Standard Deviation	0.06	0.39	0.10	0.08	0.04	0.09	0.16	0.24	0.20	0.07	0.06	0.20

7.6.2 Blank Samples

Blank samples are used to monitor physical contamination during sample preparation. A coarse-grained blank was created using locally-sourced quartz. The coarse-grained blank is used to track possible carryover contamination of samples through crushing and pulverizing of samples. The fine-grained blank is used to monitor and track any other signs of physical contamination that may affect analytical results. Table 7.7 summarizes the characteristics and analytical results for the two blank samples.

Table 7-7 Blank Sample Characteristics

Sample	Parameter	P_2O_5%	CaO%	SiO_2%	MgO%	Al_2O_3%	Fe_2O_3%
Coarse Blank	Average Value	0.012	0.022	98.000	<0.1	<0.1	0.642
	Detection Limit	0.010	0.010	0.100	0.100	0.100	0.010
	Upper Warning Limit (Avg + 5X Detection Limit)	0.062	0.072	98.500	0.500	0.500	0.692
	Lower Warning Limit - SiO2 (Avg - 2X Detection Limit)			97.800			
Fine Blank	Average Value	0.012	0.022	98.000	<0.1	<0.1	0.642
	Detection Limit	0.010	0.010	0.100	0.100	0.100	0.010
	Upper Warning Limit (Avg + 3X Detection Limit)	0.042	0.052	98.300	0.300	0.300	0.672
	Lower Warning Limit - SiO2 (Avg - 2X Detection Limit)			97.800			

Blank samples were analyzed for six oxides utilized by Aguia to evaluate the mineral resource (P_2O5, CaO, Al_2O_3, Fe_2O_3, MgO, and SiO_2). The most relevant of these oxides (P_2O_5) typically yielded values below the 0.062% upper warning limit. Four of the remaining oxides, CaO, Al_2O_3, Fe_2O_3, MgO, commonly yielded values over the upper warning limits. Coarse blanks yielded considerably more results over the upper warning limit than fine blanks, particularly for Al_2O_3 and MgO. Values for Fe_2O_3 are consistently above their respective warning limits, though this might reflect contamination from crushing and grinding. Fe_2O_3 was not determined in the coarse blank samples assayed by SGS. Figures 7.1 and 7.2 displays the results of the coarse and fine blanks, respectively.

Figure 7.1 Coarse Blank Samples

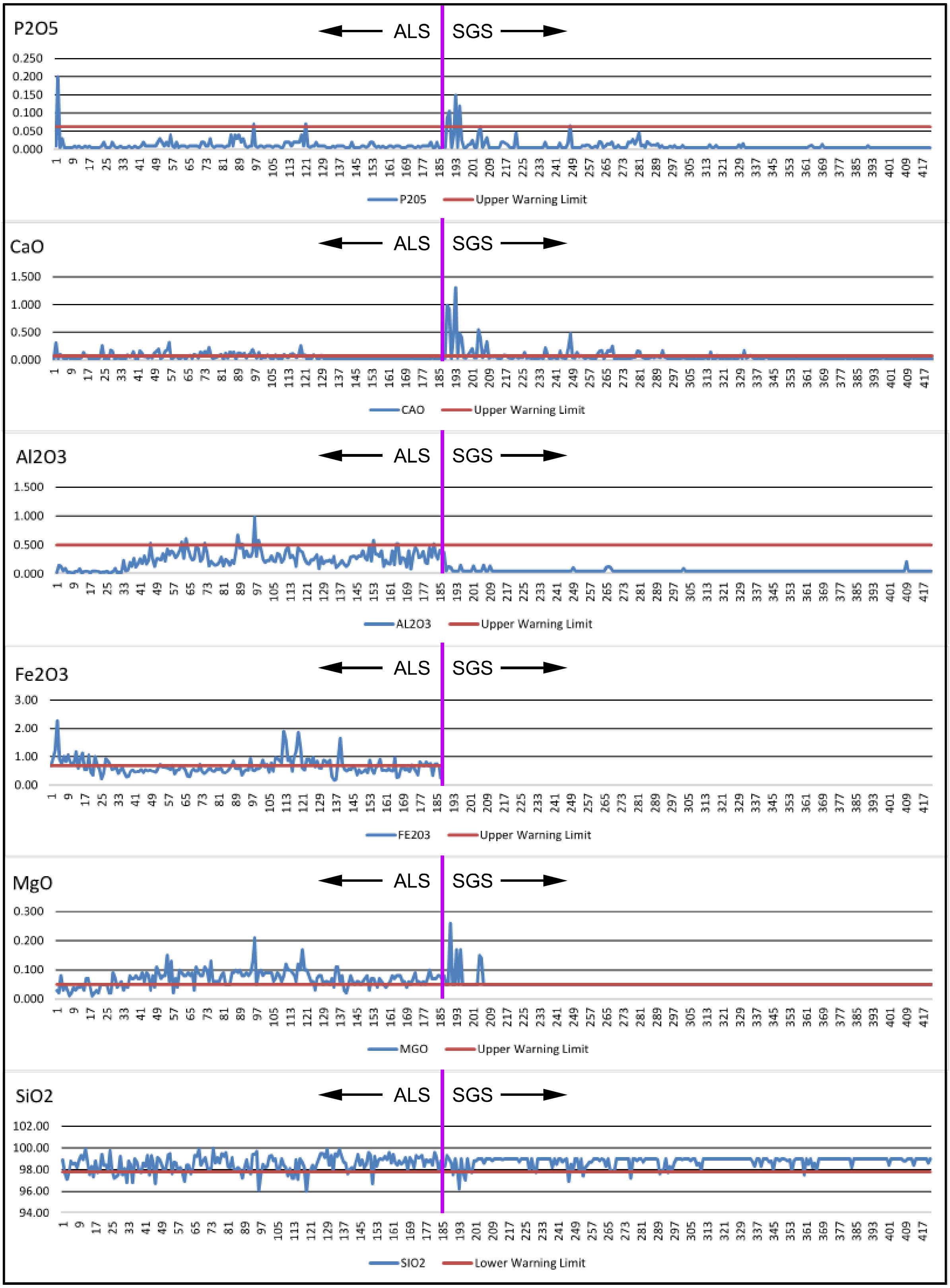
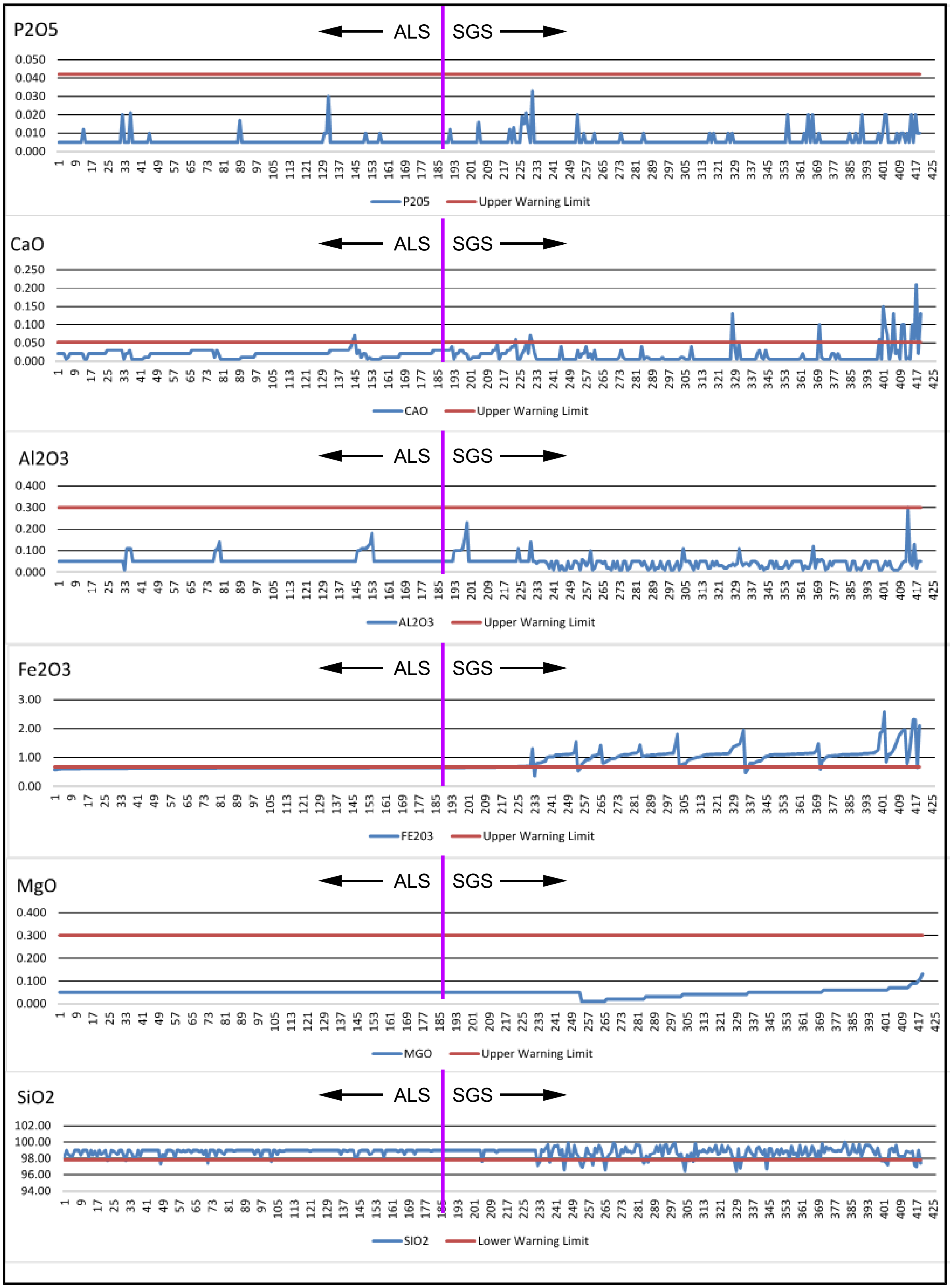


Figure 7.2 Fine Blank Samples



7.6.3 Duplicate Samples

Duplicate samples are used to track analytical precision. Duplicate samples are prepared by creating two identical samples for an interval. The second pulp is re-inserted with a blind identity into the submitted samples. Figures 7.3 and 7.4 compare the results of the duplicate samples with the original pulps. To date, 565 duplicate assays have been completed for the Três Estradas drilling and 94 duplicate assays have been completed for Joca Tavares. Comparison of duplicates to original samples show a very good correlation coefficient (R^2) equal to 0.9999 for Três Estradas and R^2 equal to 0.9998 for Joca Tavares.

Figure 7-3, Comparison of Duplicate Samples for Três Estradas

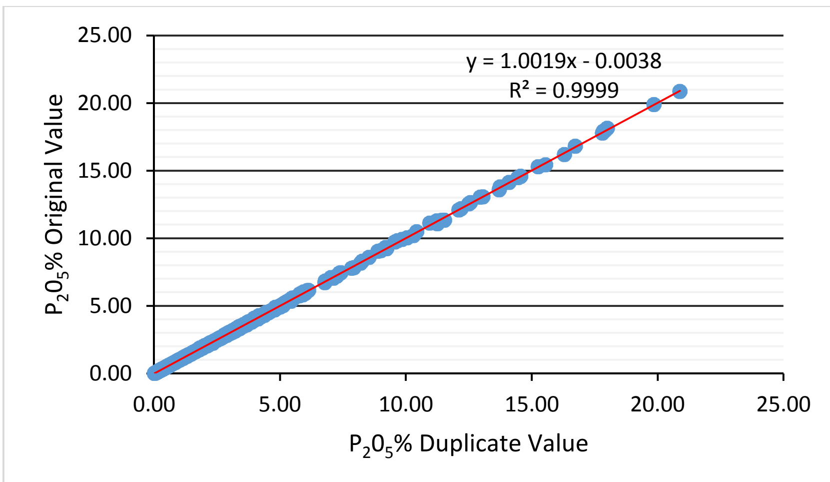
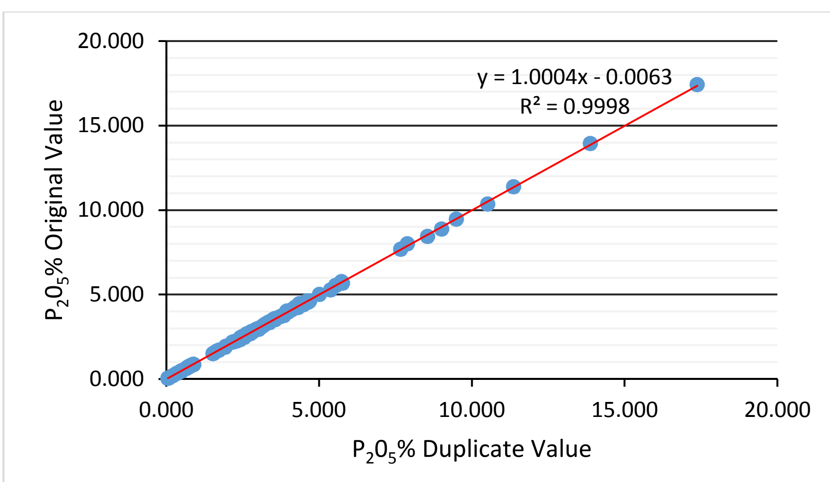


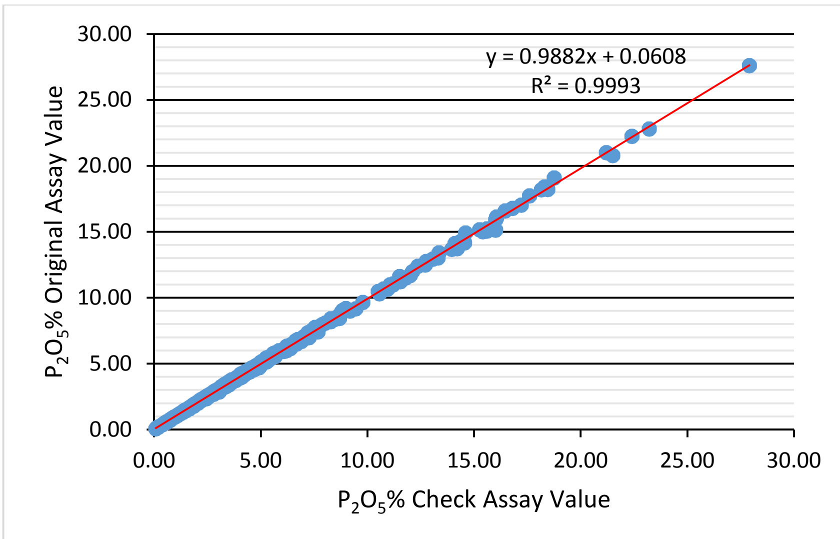
Figure 7-4, Comparison of Duplicate Samples for Joca Tavares



7.6.4 Check Assays

Selected samples are routinely subject to a second, umpire analysis as a further check to laboratory performance. During the first two drilling campaigns at Três Estradas ALS was the primary lab and SGS was used for umpire assays. With subsequent drilling at Três Estradas and with drilling at Joca Tavares, SGS became the primary laboratory and ALS was used for umpire testing. Figure 7.5 compares the results of the check assays for P_2O_5.

Figure 7-5, Comparison of Check Assays with Original Assay Values



7.6.5 QA/QC Conclusions

References, blanks, duplicates, and check assays show a strong continuity in the dataset without any significant anomalies. The CPs are of the opinion that the data used in this report adequately depicts the geology and mineralization. The data is sufficient for resource estimation.

8 MINERAL RESOURCE ESTIMATES

8.1 INTRODUCTION

This section presents the mineral resource estimates determined by Aguia and audited by Millcreek. Millcreek has reviewed the methodology and assumptions used by Aguia and has completed a detailed audit of the geologic model and resource estimation. The resource estimates presented in this section were audited and classified by Mr. Steven B. Kerr, CPG (CPG- 10352). Mr. Kerr is the Principal Geologist for Millcreek and through his experience and accreditation fulfills the requirements for independent Competent Person pursuant to the JORC Code.

8.2 TRÊS ESTRADAS

The mineral resource model prepared by Aguia for Três Estradas considers 78 core holes and 154 RC holes drilled during the period of September 2011 to December 2015. Sampling information from auger holes are not considered in the model.

8.3 RESOURCE DATABASE

The database used for mineral resource evaluation includes 78 core holes (10,801.45 m) and 154 RC holes (3,304 m) for the Três Estradas deposit (Table 8.1). The database was provided to Millcreek in a digital format and represents the Três Estradas Project exploration dataset as of February 11, 2016.

All drill hole collars were surveyed using differential GPS equipment in UTM coordinates (SAD69 datum, Zone 21S), Down-hole surveys were initiated in the second drilling campaign. In all, 58 core holes, representing 87% of the core drilled, has been surveyed at 3-meter intervals using a Maxibore tool. Core recovery exceeded 90% in 97% of all core holes. All RC holes have vertical orientation and have relatively shallow depths of the RC holes which are likely to have insignificant down-hole deviations.

Table 8-1 Summary of Drilling Database

Drilling	Count	Cumulative Meters	Assay Intervals
Core Holes	78	10,801.45	9,361
RC Holes	154	3,304.00	3,304
Total	**232**	**14,105.45**	**12,665**

Millcreek has completed a thorough review and verification of the drilling database and has found the database to be sufficient for resource modeling.

8.3.1 Geologic Model

Aguia has developed a geologic block model of the Três Estradas Property phosphate deposit using GEMS™ software. Modeling was constructed by developing a series of vertical sections spaced at 50-meter intervals and horizontal sections spaced at 10-meter intervals from the drilling data. Three-dimensional shells were developed by linking horizontal shells together with tie lines. Mineralization has an approximate strike length of 2,400m and extends to a depth of 370m below surface. Mineralized zones range in thickness from 5m to 100m. The outer mineralized envelopes were modeled into wireframe solids using a 3.00% P_2O_5 cut-off grade.

The model recognizes five mineralized, lithologic domains and three non-mineralized domains as listed in Table 8.2.

Table 8-2 Model Lithologic Domains

Domains	Block Code	Mineralized	Description
AMPSAP	210	Yes	Saprolite of Amphibolite with apatite
CBTSAP	110	Yes	Saprolite of Carbonatite
WMCBT	120	Yes	Weathered Carbonatite
MCBT	100	Yes	Meta-Carbonatite
MAMP	200	Yes	Mineralized Amphibolite
W-SAP	3	No	Saprolite Waste
W-WEATH	2	No	Weathered Waste Rocks
W-ROCK	1	No	Waste Rock

Aguia constructed wireframes of the meta-carbonatite and the amphibolite. Meta-carbonatite is differentiated by weathering into three domains: saprolite, weathered carbonatite, and fresh meta-carbonatite. Amphibolite is separated into two domains: saprolite and fresh amphibolite.

Grade estimations were made using ordinary kriging interpolation for the domains MCBT. WMCBT, and MAMP. Inverse Distancing Squared (ID2) was used for grade estimations of the two saprolite domains, CBTSAP and AMPSAP. All assays were composited to 1.0m lengths. All estimations are based on a homogeneous block model. Dimensions of the block model are displayed in Table 8.3. Aguia has built the model using a minimum cut-off grade of 3.0% P_2O_5.

Table 8-3 Block Model Dimensions

Dimensions	Minimum	Maximum	Block Size	Number of Blocks
X	765,560	767,140	5	316
Y	6,576,910	6,579,810	25	116
Z	-100	400	10	20
Rotation	40°			

Figure 8.1 presents a plan view of the modeled 3D solids and surfaces while Figure 8.2 presents a perspective view of the modeled 3D solids and surfaces of the model.

8.3.2 Specific Gravity

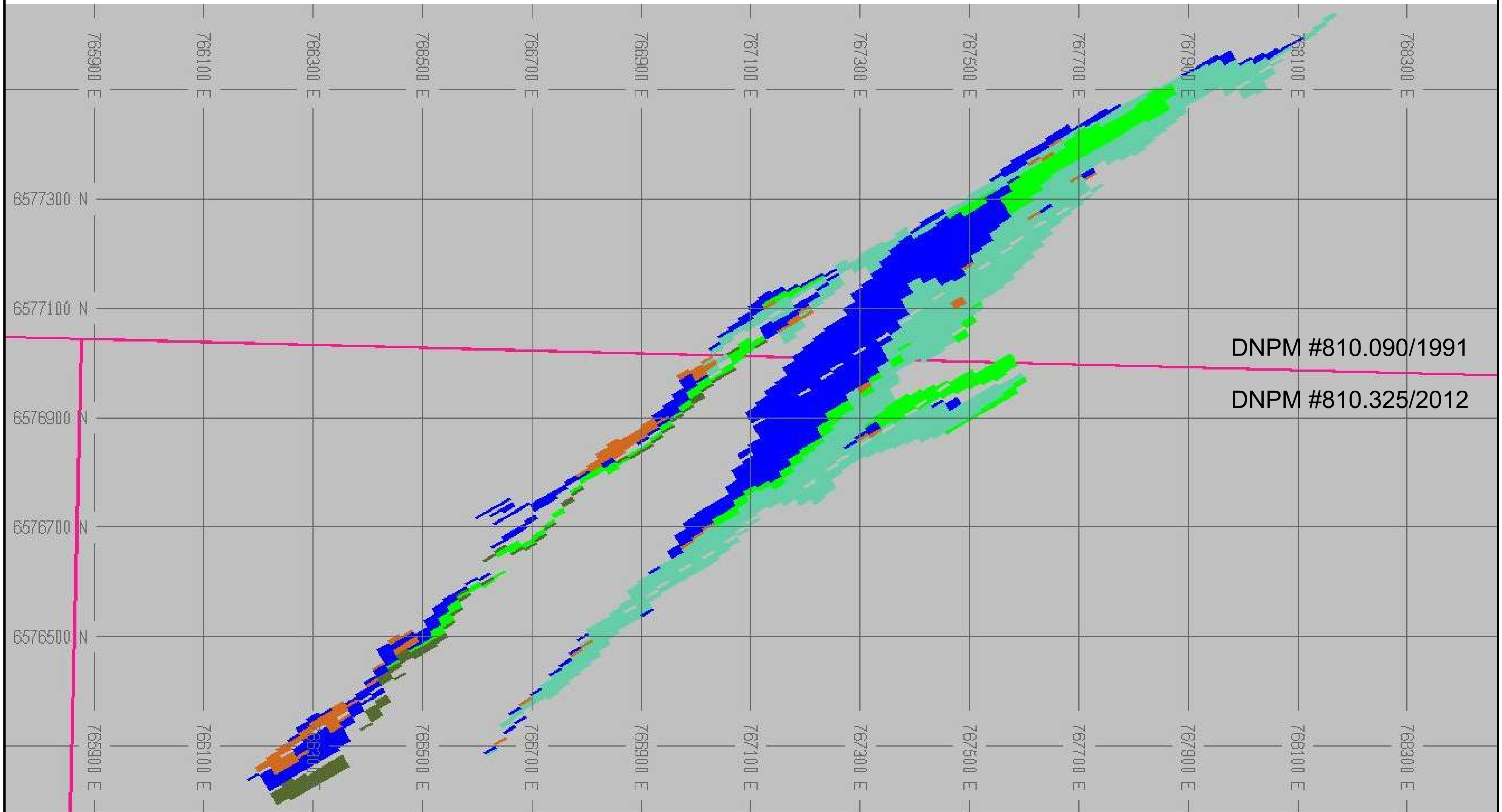
A total of 3,045 specific gravity measurements have been completed on core samples for Três Estradas as shown in Table 8.4. Specific gravity measurements have been determined from whole core segments using a weight in air/weight in water method. Average values for the specific gravity measurements are further weighted to cumulative interval lengths from drilling for calculation of volumes to tonnes.

Table 8-4 Specific Gravity Values for Resource Modeling

Domain	Number of Measurements	Specific Gravity (g/cc)	Length-Weighted Specific Gravity (g/cc)
AMPSAP	72	1.87	1.79
CBTSAP	45	1.53	1.48
WMCBT	72	2.70	2.72
MCBT	912	2.83	2.82
MAMP	56	2.86	2.85
W-SAP	219	1.80	1.78
W-WEATH	171	2.65	2.68
W-ROCK	1,498	2.82	2.82
Total	**3,045**		

8.3.3 Statistical Analysis, Compositing, and Capping

Millcreek reviewed the statistics for assay samples in the five mineralized domains. There are sufficient samples in each domain to support resource estimation. Table 8.5 presents the length-weighted averages and summary statistics for each of the six oxides within the five mineralized domains.



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Rock Type

- Meta-Carbonatite
- Carbonatitic Saprolite
- Weathered Meta-Carbonatite
- Amphibolite
- Amphibolitic Saprolite

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FIGURE 8.1

Plan View
Três Estradas Block Model
Aguia Resources Ltd.
Três Estradas PEA

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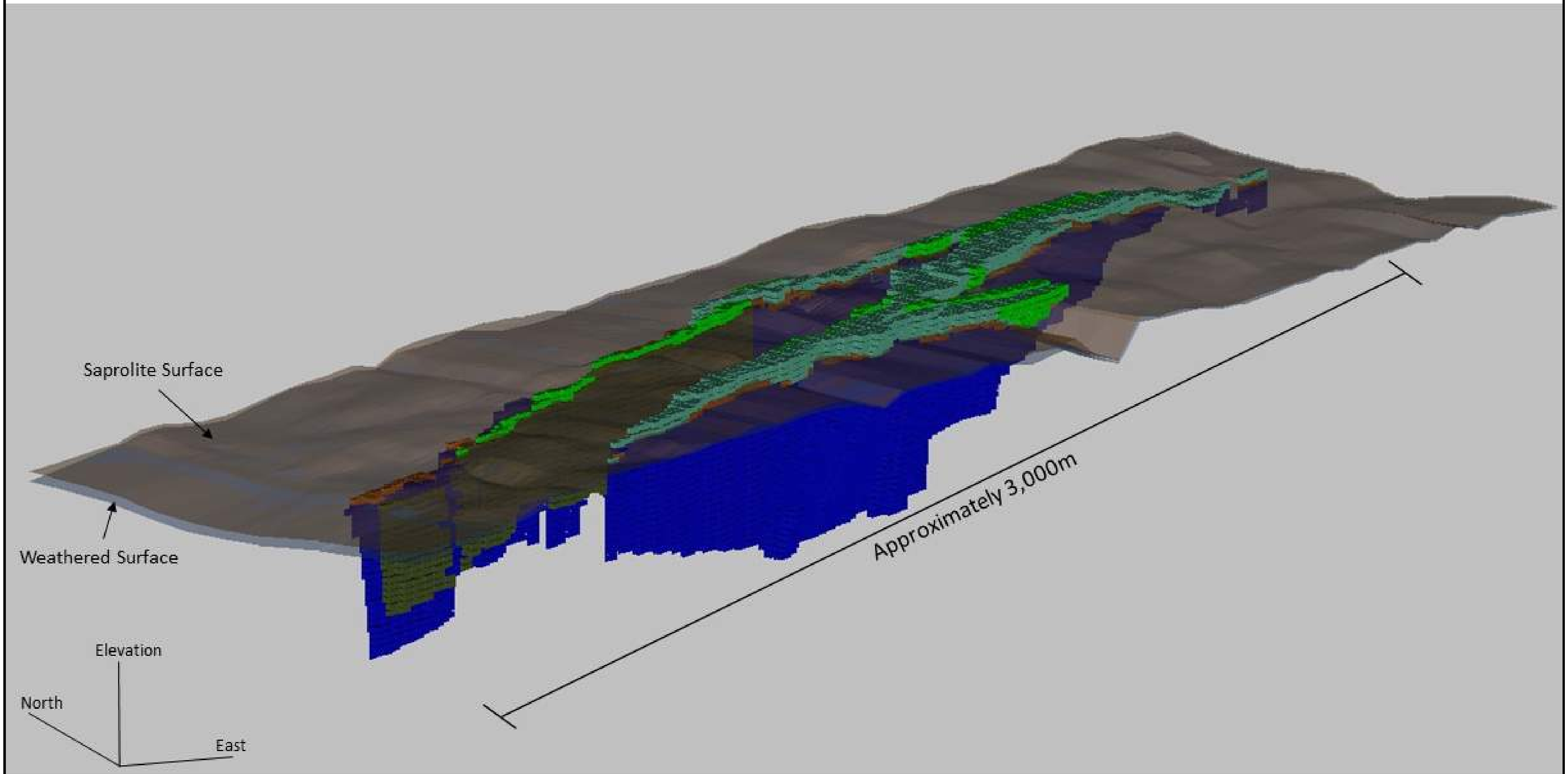

Rock Type

- Meta-Carbonatite
- Carbonatitic Saprolite
- Weathered Meta-Carbonatite
- Amphibolite
- Amphibolitic Saprolite

AGUIA

FIGURE 8.2

Perspective View
Três Estradas Block Model
Aguia Resources Ltd.
Três Estradas PEA

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Table 8-5 Summary Statistics of Oxide Grades for Mineralized Domains

Domain	Rock Code	Stats*	P_2O_5	CaO	Al_2O_3	Fe_2O_3	MgO	SiO_2
AMPSAP	210	Average	6.41	11.17	7.89	16.47	6.50	38.89
		Std. Dev.	3.33	4.90	3.24	4.35	3.65	9.19
		Minimum	0.24	0.33	0.47	1.36	0.18	11.55
		Maximum	18.15	40.10	19.70	36.30	14.10	96.00
		Count	388					
CBTSAP	110	Average	11.47	18.78	4.72	19.40	4.43	27.98
		Std. Dev.	5.27	7.97	2.52	7.17	3.34	10.35
		Minimum	0.38	0.38	0.47	3.74	0.15	2.42
		Maximum	36.90	49.30	17.10	58.30	15.50	87.10
		Count	815					
WMCBT	120	Average	5.12	34.49	2.37	9.88	5.48	14.34
		Std. Dev.	3.60	8.57	1.64	5.32	2.80	7.80
		Minimum	2.11	6.28	0.08	1.99	0.60	1.44
		Maximum	25.00	49.80	10.30	49.32	16.60	54.90
		Count	738					
MCBT	100	Average	3.62	35.72	1.81	7.62	7.54	10.45
		Std. Dev.	0.98	6.59	1.44	2.42	2.89	5.81
		Minimum	0.13	6.44	0.01	1.46	1.66	1.01
		Maximum	12.90	52.40	15.10	39.80	16.90	50.50
		Count	3,942					
MAMP	200	Average	3.93	19.19	6.93	12.75	9.10	33.07
		Std. Dev.	1.46	4.60	1.64	2.33	1.58	5.12
		Minimum	0.78	4.82	1.61	5.81	3.98	9.50
		Maximum	8.21	41.70	10.90	19.30	14.90	46.60
		Count	219					

*Length-weighted averages

Aguia has composited all assay intervals for the five domains to 1.0-meter lengths. Figure 8.3 shows the cumulative distribution of assay sample lengths. The cumulative frequency plot shows that 87% of all mineralized samples have a sample length less than or equal to 1.0m and approximately 70% of the samples are 1.0m in length. Millcreek considers the 1.0-meter composite length to be an appropriate length for sample composites.

Aguia has not employed any grade capping to limit the influence of high grade outliers. Millcreek reviewed probability plots for each of the oxides and found only one or two outliers within each of the five mineralized domains. Further review of the mean grade relationships found that these few outliers had no significant impact to the dataset. Table

8.6 presents the length-weighted averages and summary statistics for each of the six oxides within the five mineralized domains following compositing.

Figure 8-3, Sample Length Probability

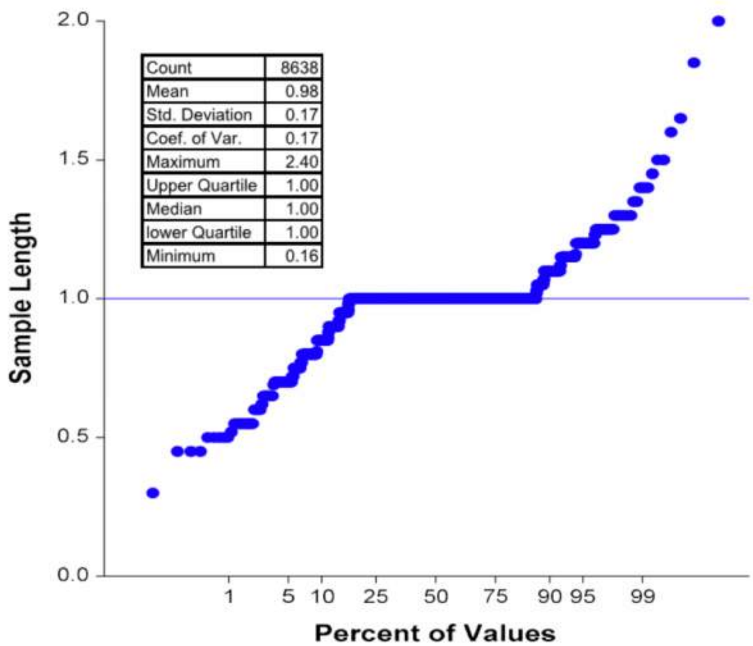


Table 8-6 Summary Statistics of Composite Grades for Mineralized Domains

Domain	Rock Code	Stats*	P_2O_5	CaO	Al_2O_3	Fe_2O_3	MgO	SiO_2
AMPSAP	210	Average	6.41	11.18	7.89	16.47	6.49	38.87
		Std. Dev.	3.29	4.63	3.15	4.22	3.61	8.59
		Minimum	0.56	0.44	1.87	5.82	0.24	17.77
		Maximum	17.93	32.74	19.70	36.3	14.10	77.50
		Count	389					
CBTSAP	110	Average	11.47	4.72	18.79	19.40	4.43	27.98
		Std. Dev.	5.16	2.47	7.79	7.13	3.29	10.17
		Minimum	0.38	0.64	0.38	3.74	0.16	3.35
		Maximum	30.12	16.50	49.30	58.30	15.26	87.10
		Count	807					
WMCBT	120	Average	5.11	2.37	34.49	9.88	5.48	14.34
		Std. Dev.	3.57	1.62	8.47	5.29	2.76	7.67
		Minimum	1.13	0.15	6.28	1.99	0.60	2.01
		Maximum	25.00	10.30	49.80	49.32	16.60	54.90
		Count	741					
MCBT	100	Average	3.62	1.81	35.72	7.62	7.54	10.45
		Std. Dev.	0.92	1.30	6.15	2.19	2.77	5.33
		Minimum	0.13	0.01	2.00	0.35	0.27	0.41
		Maximum	12.90	14.92	50.10	32.83	16.90	50.50
		Count	3,946					
MAMP	200	Average	3.93	19.19	6.93	12.75	9.10	33.07
		Std. Dev.	1.38	4.17	1.52	2.25	1.46	4.72
		Minimum	0.78	4.82	1.79	5.90	3.98	11.08
		Maximum	8.21	40.33	10.90	19.30	14.90	46.60
		Count	239					

*Length-weighted averages

8.3.4 Variography and Grade Estimation

Aguia performed a series of variograms and variogram maps in GEMS mining software to model the spatial continuity of the six oxides (P_2O_5, CaO, Al_2O_3, Fe_2O_3, MgO, and SiO2). Search ellipsoids and different orientations for strike, dip and plunge were evaluated. The test results and selected variograms are presented below in Table 8.7. The variography studies were performed using the composites in the meta-carbonatite (MCBT). Variography shows a preference in orientation that is nearly coincidental to the strike and dip of the meta-carbonatite and the Cerro dos Cabritos Fault. The variograms were normalized before running the resource estimation.

Table 8-7 Variogram Parameters for MCBT

Variable	GEMS Rotation (ADA)			Variogram Model							Comments
	Azimuth	Dip	Azimuth	Nugget	Str. No.	Type	CC	Strike	Width	Vertical	
P_2O_5%	48	0	138	0.25	1	Spherical	0.40	95.00	28.00	15.00	Normalized Variogram
	48	0	138		2	Spherical	0.35	173.00	35.00	25.00	
CaO%	48	0	138	0.25	1	Spherical	0.40	90.00	38.00	6.00	Normalized Variogram
	48	0	138		2	Spherical	0.35	200.00	48.00	15.00	
Al_2O_3%	48	0	138	0.4	1	Spherical	0.15	20.00	110.00	4.00	Normalized Variogram
	48	0	138		2	Spherical	0.45	140.00	110.00	14.00	
Fe_2O_3%	48	0	138	0.25	1	Spherical	0.30	90.00	50.00	4.00	Normalized Variogram
	48	0	138		2	Spherical	0.45	150.00	70.00	9.00	
MgO%	48	0	138	0.2	1	Spherical	0.25	110.00	35.00	6.00	Normalized Variogram
	48	0	138		2	Spherical	0.55	185.00	145.00	70.00	
SiO_2	48	0	138	0.15	1	Spherical	0.50	105.00	55.00	3.00	Normalized Variogram
	48	0	138		2	Spherical	0.35	140.00	55.00	11.00	

Grade estimation was completed using ordinary kriging interpolation for the domains MCBT, WMCBT and MAMP and ID2 was used for the domains CBTSAP and AMPSAP. All estimations are based on 1.0 m composites on a homogeneous block model with unitary dimensions of 25m N, by 5m E, and 10 m in elevation rotated 40° in a clock-wise direction. Three estimation passes are used with progressively relaxed search ellipsoids and data requirements based on the variography:

- **Measured**: Blocks estimated in the first pass using half the distance of variogram range and based on composites from a minimum of three boreholes;
- **Indicated**: Blocks estimated in the first two passes within the full range of the variogram and based on composites from a minimum of two boreholes; and
- **Inferred**: All remaining blocks within the wireframe limits in an unconfined search not classified in the first two estimation passes.

In all three passes, the maximum number of composites per drill hole is unconstrained.

Table 8.8 presents the in-situ resource estimate for the geologic block model. This is the in-place estimate without consideration for mining method, recovery, processing or economic constraints. The in-situ estimate is based on the above stated parameters for estimation and classification of the phosphate mineralization and serves as the basis for the Mineral Resource Statement presented in Section 8.2.7.

Table 8-8 In-Situ Resource for the Três Estradas Phosphate Deposit

Domain	Resource Classification	Volume (m^3 X 1,000)	Density (T/m^3)	Resource Tonnes	Grade (wt. %)					
					P_2O_5	CaO	MgO	Fe_2O_3	SiO_2	Al_2O_3
AMPSAP	Indicated	261.9	1.79	468,813	6.31	10.28	6.91	16.87	39.78	7.81
	Inferred	301.9	1.79	540,388	6.06	10.69	6.89	16.66	38.54	7.77
	Sub-Total	**563.8**	**1.79**	**1,009,202**	**6.18**	**10.50**	**6.90**	**16.76**	**39.10**	**7.79**
CBTSAP	Indicated	1,181.8	1.48	1,749,098	10.25	18.83	5.47	19.51	28.55	4.66
	Inferred	1,005.3	1.48	1,487,810	11.31	19.01	4.47	21.37	27.63	4.43
	Sub-Total	**2,187.1**	**1.48**	**3,236,908**	**10.75**	**18.92**	**5.00**	**20.39**	**28.12**	**4.55**
WMCBT	Measured	75.0	2.72	204,000	5.90	35.31	5.75	11.41	11.77	2.13
	Indicated	572.6	2.72	1,557,448	5.30	34.56	6.38	9.67	13.49	2.16
	Inferred	305.8	2.72	831,675	4.44	37.41	5.23	8.27	11.87	1.90
	Sub-Total	**953.4**	**2.72**	**2,593,123**	**5.07**	**35.53**	**5.96**	**9.36**	**12.83**	**2.07**
MCBT	Measured	200.0	2.83	566,000	4.08	34.36	7.62	8.34	12.60	2.23
	Indicated	4,082.5	2.83	11,553,475	3.69	34.43	7.85	8.06	11.83	2.11
	Inferred	20,527.5	2.83	58,092,823	3.66	34.80	7.99	7.89	11.34	1.93
	Sub-Total	**24,810.0**	**2.83**	**70,212,298**	**3.67**	**34.73**	**7.96**	**7.92**	**11.43**	**1.96**
MAMP	Inferred	1,816.2	2.85	5,176,090	3.63	19.46	9.29	12.28	31.74	6.85
	Sub-Total	**1,816.2**	**2.85**	**5,176,090**	**3.63**	**19.46**	**9.29**	**12.28**	**31.74**	**6.85**
TOTAL		**30,330.4**	**2.71**	**82,228,666**	**4.02**	**32.96**	**7.87**	**8.79**	**13.66**	**2.43**

The estimated in-situ resource identifies 82.2Mt of material with an average grade of 4.02% P_2O_5 using a minimum cut-off of 3.0% P_2O_5. Approximately 5% of the deposit (4.2Mt) is hosted in the saprolite (CBTSAP & AMPSAP) overlying the meta-carbonatite and amphibolite. The weathered transitional zone (WMCBT) represents 3% of the deposit (2.5Mt) and 75.4Mt (92%) of the resource is found in the two fresh rock domains (MAMP & MCBT).

8.3.5 Model Validation

Millcreek has conducted an audit of the block model prepared by Aguia and of the resources estimated from the model. Millcreek loaded the Três Estradas block model into MineSight®, a geology and mine planning software that competes directly with GEMS. The Millcreek audit and validation of the Três Estradas block model consisted of the following steps:

1. Drilling data was loaded into MineSight® to compare block/drill hole grade relationships in cross section view. A visual inspection of 24 sections spaced at 100-meter spacing's showed strong correlation between drill hole assays and composited values in the model. Three examples of cross sections viewed through visual inspection are shown in Figure 8.4

2. Millcreek completed a separate estimate in MineSight following the parameters used by Aguia. Our own resource estimate was within 1.5% of Aguia's estimate.
3. Grade estimation was tested by systematically removing drilling data from the model and evaluating the interpolated values with the posted values for drill holes removed from the model. Twenty-seven drill holes were tested this manner in nine separate estimation runs. The largest difference observed between posted and interpolated values was 0.8% resulting in a 0.1% difference for an estimation run.
4. The block model was evaluated using a series of swath plots. A swath plot is a graphical display of the grade distribution derived from a series of bands, or swaths, generated as sections through the deposit. Grade variations from the ordinary kriging model are compared to nearest neighbor (NN) searches on drill hole composites and estimations made from inverse distancing squared (ID2).

   On a local scale, the NN search does not provide reliable estimations of grade but, on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. Therefore, if the model estimation completed by ordinary kriging is unbiased, the grade trends may show local fluctuations on a swath plot but the overall trend should be similar to the NN distribution of grade.

   Three swath plots are shown in Figure 8.5
5. A separate estimate using ID2 was made of the block model to evaluate the kriging estimation. The ID2 model used a 15 NN search. ID2 identifies 82.2Mt at a grade of 3.86 P_2O_5%, a grade approximately 3.9% lower than ordinary kriging. Resources in the MAMP domain are all classified as inferred resource.

8.3.6 Mineral Resource Statement

The JORC Code defines:

"A 'Mineral Resource" is a concentration or occurrence of solid material of economic interest in or on the Earth's crust is such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The phrase "reasonable prospects for eventual economic extraction" implies that the quantity and grade estimates meet certain economic thresholds, and that the mineral resources are reported at an appropriate cut-off grade that takes into account the extraction method and processing recovery. Millcreek considers the phosphate mineralization at the Três Estradas phosphate deposit to be amenable to extraction using open-pit mining methods. Millcreek has used the Lerchs-Grossman optimizing algorithm to evaluate the profitability of each resource block in the model based on its value. Optimization parameters are summarized in Table 8.9 and are derived from subsequent sections of this study that identify the mining, processing, and economic constraints.

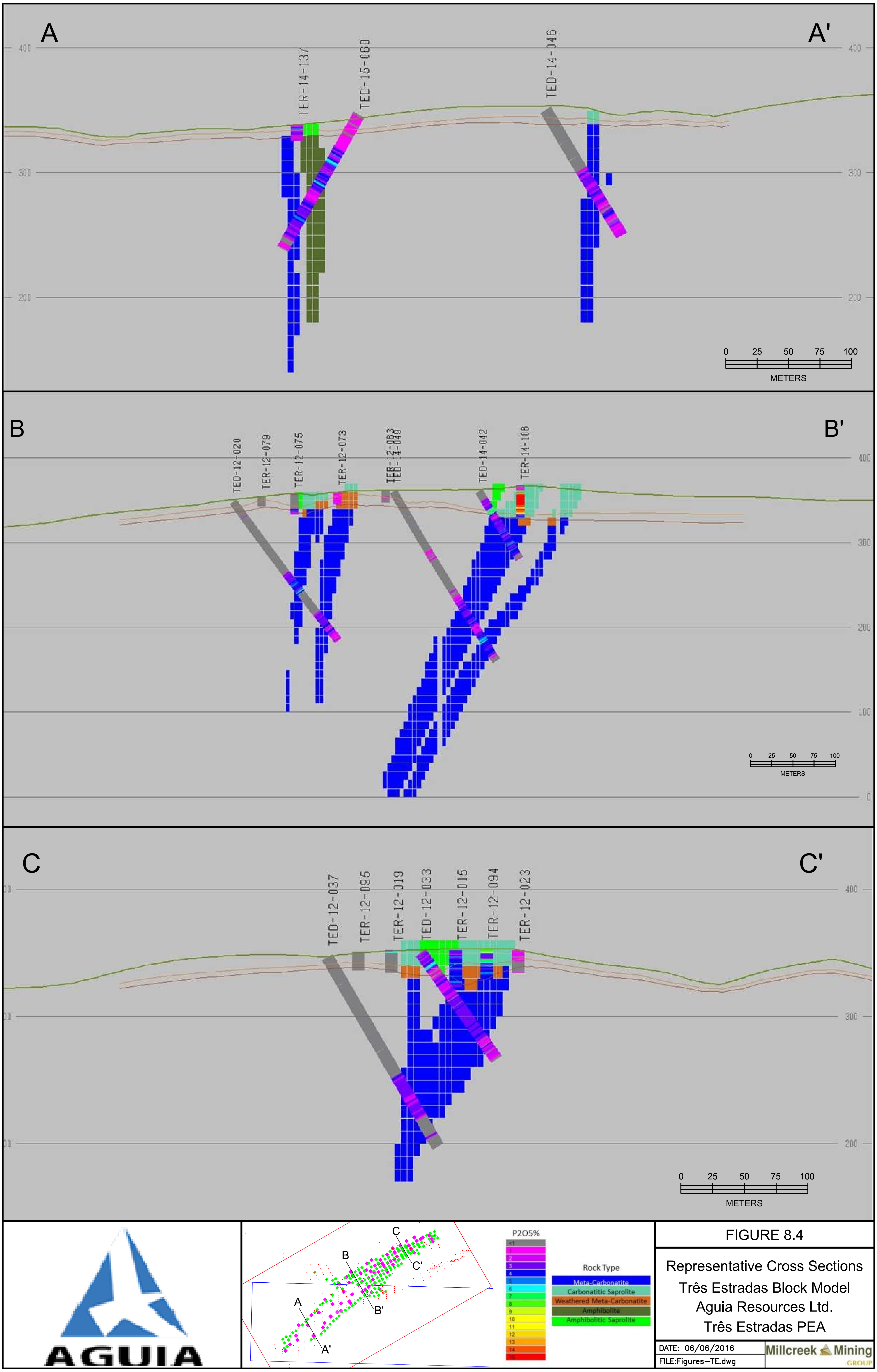
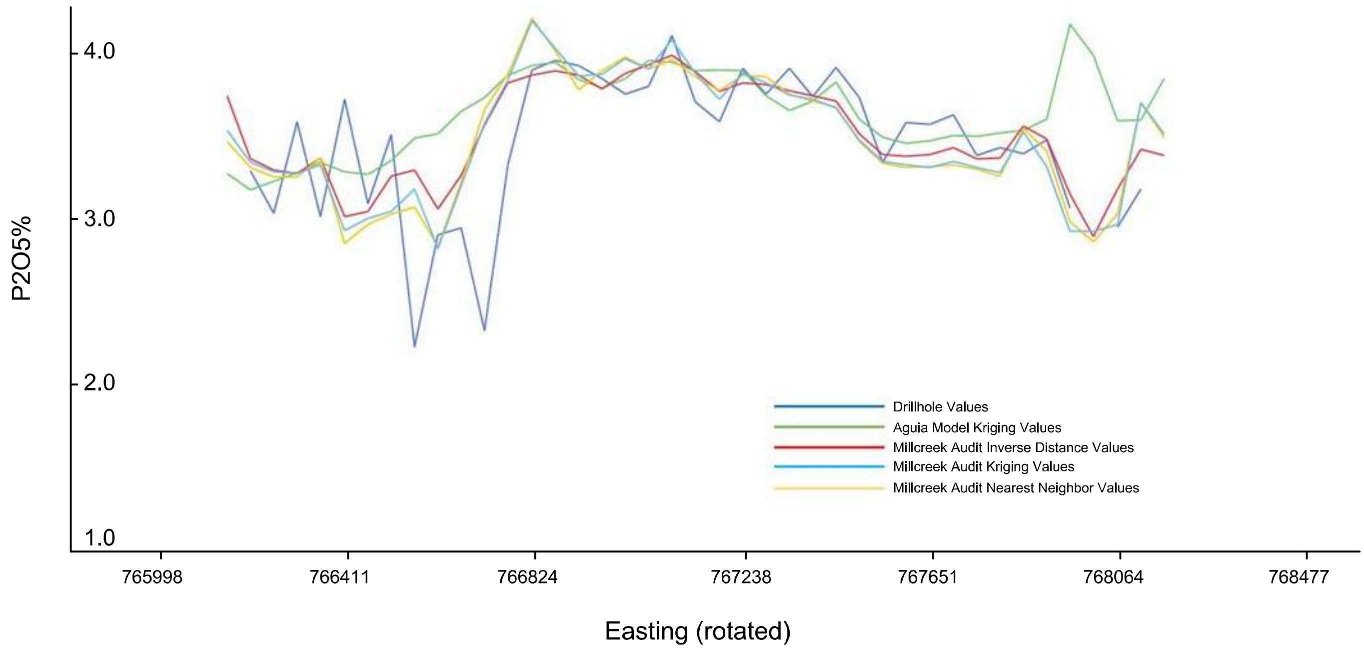


FIGURE 8.4

Representative Cross Sections
Três Estradas Block Model
Aguia Resources Ltd.
Três Estradas PEA

P2O5% Swath Plot - East-West Orientation



P2O5% Swath Plot - North-South Orientation

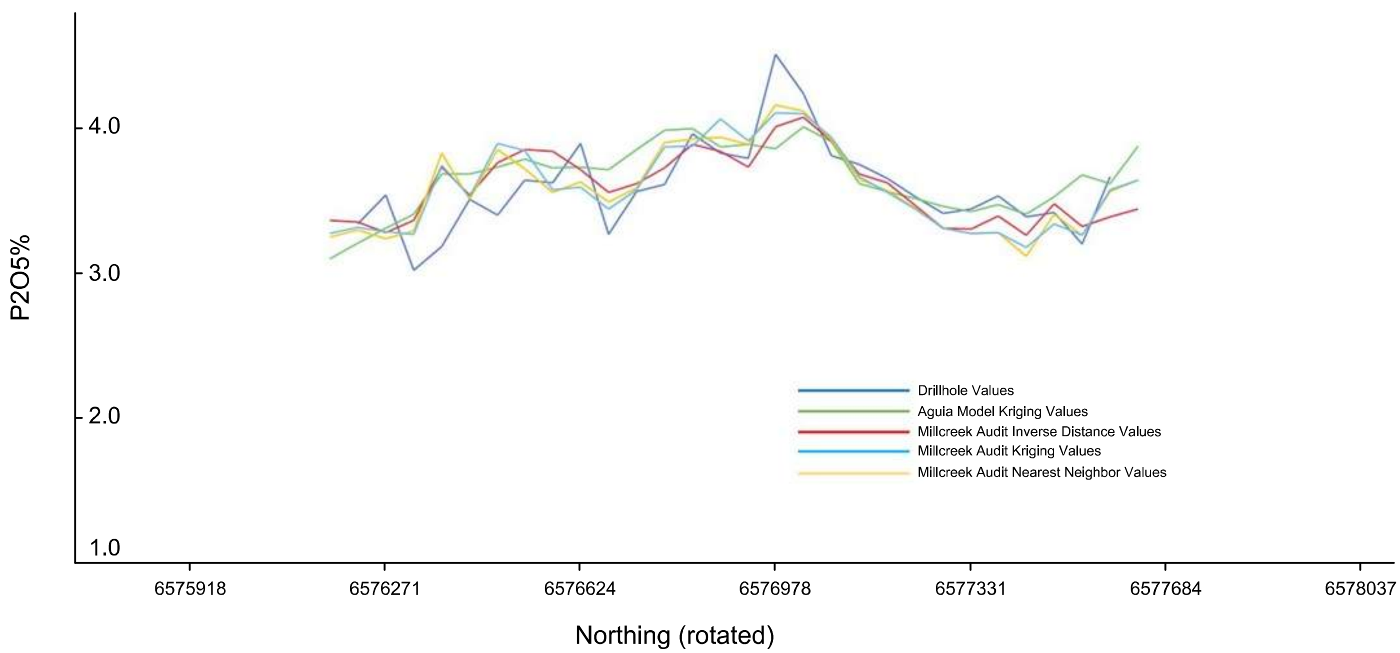


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FIGURE 8.5

Evaluation Swath Plots
Três Estradas Block Model
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Três Estradas PEA

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Table 8-9 TE Pit Optimization Parameters

Parameters	Value
Mining Recovery/Mining Dilution	100 / 0
Process Recovery P_2O_5 Saprolite	80%
Process Recovery P_2O_5Fresh	84%
Process Recovery Calcite Fresh	72%
Concentrate Grade Saprolite	31.0%
Concentrate Grade Fresh Rock	30.2%
Overall Pit Slope Angle Saprolite/Fresh Rock	35 / 50 Degrees
Mining Cost (US$/tonne Mined)	1.34
Process Cost (US$/tonne ROM)	4.79
G&A (US$/tonne of ROM)	0.82
Calcite Production Cost (US$/tonne of concentrate)	7.3
Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)	$250
Selling Price (US$/tonne of concentrate at Calcite)	$47
Royalties - Gross	2%
CFEM Tax - Gross	2%
Marketing Costs - Gross	2%
Exchange Rate (US$ to R$)	3.8

Using the Lerchs-Grossman algorithm, Millcreek has developed an optimized pit shell using the above parameters. The optimized pit shell captures the resources estimated in the block model that have reasonable prospects for economic extraction. The pit optimization also considers the recovery of calcite as a byproduct to mining and processing of the meta-carbonatite. Calcite recovery through column flotation is further addressed in subsequent sections of the PEA study. The pit optimization results are used solely for the purpose of testing the “reasonable prospects for economic extraction” and do not represent an attempt to estimate mineral reserves. Mineral reserves can only be estimated with a further detailed level of study. There are no mineral reserves being reported in this study for the Três Estradas deposit. Table 8.10 presents the Mineral Resource Statement for the Três Estradas phosphate deposit, audited and confirmed by Millcreek.

Table 8-10 Audited Mineral Resource Statement*, Três Estradas Phosphate Deposit, Millcreek Mining Group, June 24, 2016

Resource Classification	Domain	Tonnage (T X 1,000)	P_2O5 (%)	Cao (%)	P_2O_5 as Apatite (%)	CaO as Calcite (%)
Measured	WMCBT	204	5.23	35.58	12.38	63.68
	MCBT	541	4.11	34.44	9.75	61.63
Total Measured Resources		**745**	**4.42**	**34.75**	**10.47**	**62.19**
Indicated	AMSAP	460	6.30	11.27	14.93	20.17
	CBTSAP	1,741	10.49	16.88	24.85	30.21
	WMCBT	1,545	4.67	34.78	11.07	62.24
	MCBT	11,324	3.82	35.01	9.04	62.66
Total Indicated Resources		**15,070**	**4.75**	**32.17**	**11.25**	**57.57**
Inferred	AMSAP	521	6.09	11.08	14.42	19.82
	CBTSAP	1,470	11.65	17.72	27.60	31.71
	WMCBT	796	4.27	35.22	10.11	63.02
	MCBT	52,581	3.73	35.42	8.83	63.39
	MAMP	3,523	4.01	19.08	9.50	34.14
Total Inferred Resources		**58,891**	**3.97**	**33.78**	**9.41**	**60.46**

* Mineral resources are not mineral reserves. And have not demonstrated economic viability. All numbers have been rounded to reflect relative accuracy of the estimates. Mineral resources are reported within a conceptual pit shell at a cut-off grade of 3% P_2O_5. Optimization parameters are stated in Table 8.9

The Audited Mineral Resource identifies 74.7Mt of material with an average grade of 4.13% P_2O_5 using a minimum cut-off of 3.0% P_2O_5.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

8.3 JOCA TAVARES

The mineral resource model prepared by Aguia for Joca Tavares considers 40 core holes drilled during the period of October and December 2015. Sampling information from auger holes are not considered in the model.

8.3.1 Resource Database

The database used for mineral resource evaluation for Joca Tavares represents 2,280.8m of core from 40 holes. The database was provided to Millcreek in a digital format and represents the Joca Tavares Project exploration dataset as of March 28, 2016.

All drill hole collars were surveyed using differential GPS equipment in UTM coordinates (SAD69 datum, Zone 22S), JT is a relatively shallow deposit with drill depths ranging from 15.3m to 165.3m. Only the six core holes with drill depths in excess of 100 m were surveyed with a Maxibore down-hole survey tool at 3-meter intervals. Overall core recovery exceeded 93% in the 40 core holes.

Millcreek has completed a thorough review and verification of the drilling database and has found the database to be sufficient for resource modeling.

8.3.2 Geologic Model

Aguia has developed a geologic block model of the JT Deposit phosphate deposit using GEMS software. Modeling was done by developing a series of vertical sections spaced at 50-meter intervals from the drilling data. Three-dimensional shells were developed by linking the vertical sections together with tie lines. Mineralization has an approximate length of 350m on its east-west axis, 250m along the north-south axis, and to a depth of 60m below surface. Mineralized zones range in thickness from 5m to 55m. The outer mineralized envelopes were modeled into wireframe solids using a 3.00% P_2O_5 cut-off grade.

The model recognizes two mineralized, lithologic domains and two non-mineralized domains as listed in Table 8.11.

Table 8-11 Model Lithologic Domains

Domain	Block Code	Mineralized	Description
CBTSAP	110	Yes	Saprolite of Carbonatite
CBT	100	Yes	Weathered and Fresh Carbonatite
W-SAP	2	No	Saprolite Waste
W-ROCK	1	No	Waste Rock

Grade estimations were made using ordinary kriging interpolation for CBT and ID2 was used for grade estimation of the saprolite domain, CBTSAP. All assays were composited to 1.0m lengths. All estimations are based on a homogeneous block model. Dimensions of the block model are displayed in Table 8.12. Aguia has built the model using a minimum cut-off grade of 3.0% P_2O_5.

Table 8-12 Block Model Dimensions

Dimensions	Minimum	Maximum	Block Size	Number of Blocks
X	234,010	234,480	10	47
Y	6,566,640	6,566,970	10	33
Z	193.75	288.75	2.5	38

Figure 8.6 presents a plan view of the modeled 3D solids and surfaces while Figure 8.7 presents a perspective view of the modeled 3D solids and surfaces of the model.

8.3.3 Specific Gravity

A total of 609 specific gravity measurements have been completed on core samples for Joca Tavares as shown in Table 8.13. Specific gravity measurements have been determined from whole core segments using a weight in air/weight in water method. Average values for the specific gravity measurements are further weighted to cumulative interval lengths from drilling for calculation of volumes to tonnes.

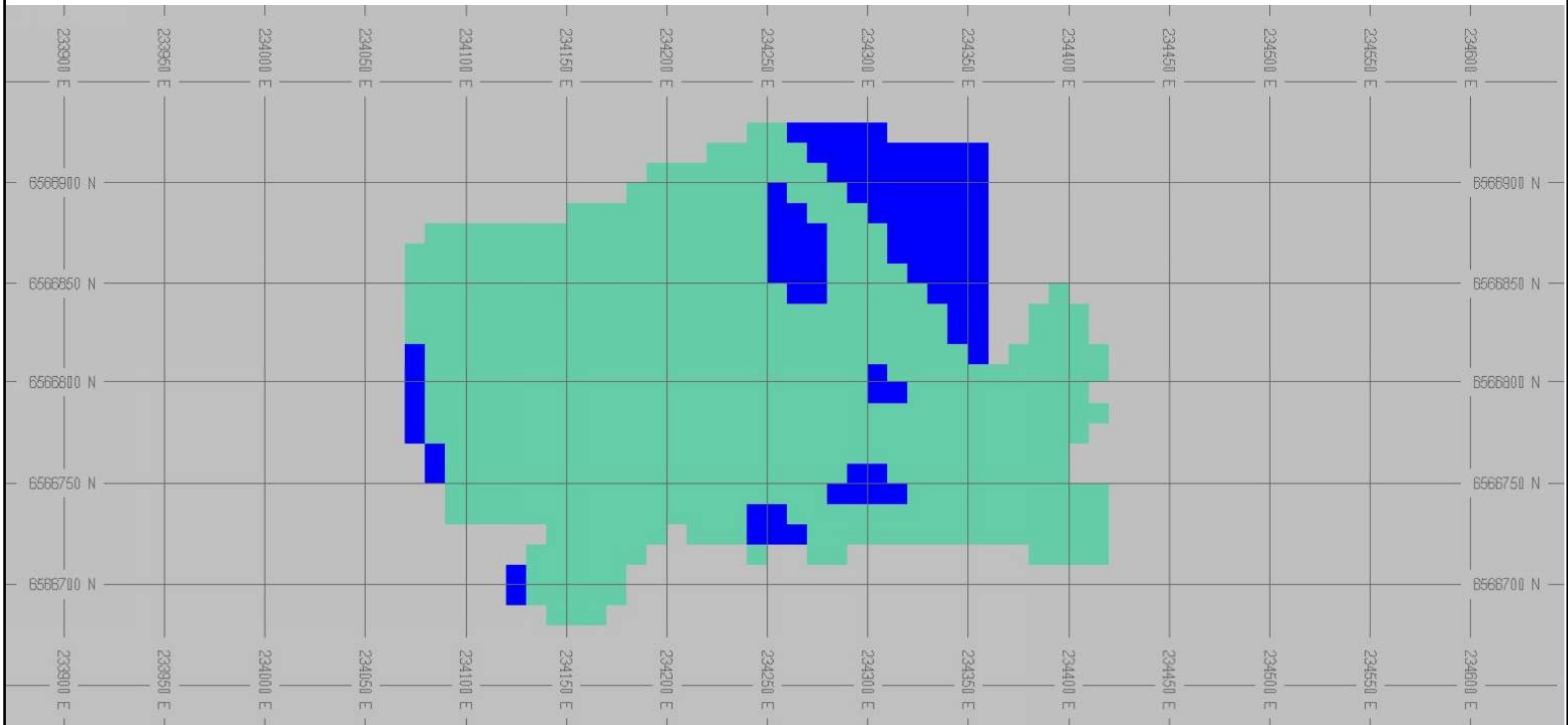
Table 8-13 Specific Gravity Values for Resource Modeling

Domain	Number of Measurements	Specific Gravity (g/cc)	Length-Weighted Specific Gravity (g/cc)
CBTSAP	34	1.78	1.74
CBT	329	2.84	2.84
W-SAP	22	2.27	2.22
W-ROCK	224	2.73	2.74
Total	**609**		

8.3.4 Statistical Analysis, Compositing, and Capping

Millcreek reviewed the statistics for assay samples in the two mineralized, lithologic domains. There are sufficient samples in each domain to support resource estimation.

Table 8.14 presents the length-weighted averages and summary statistics for each of the six oxides within the five mineralized domains.



AGUIA

Rock Type

- Meta-Carbonatite
- Carbonatitic Saprolite

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FIGURE 8.6

Plan View
Joca Tavares Block Model
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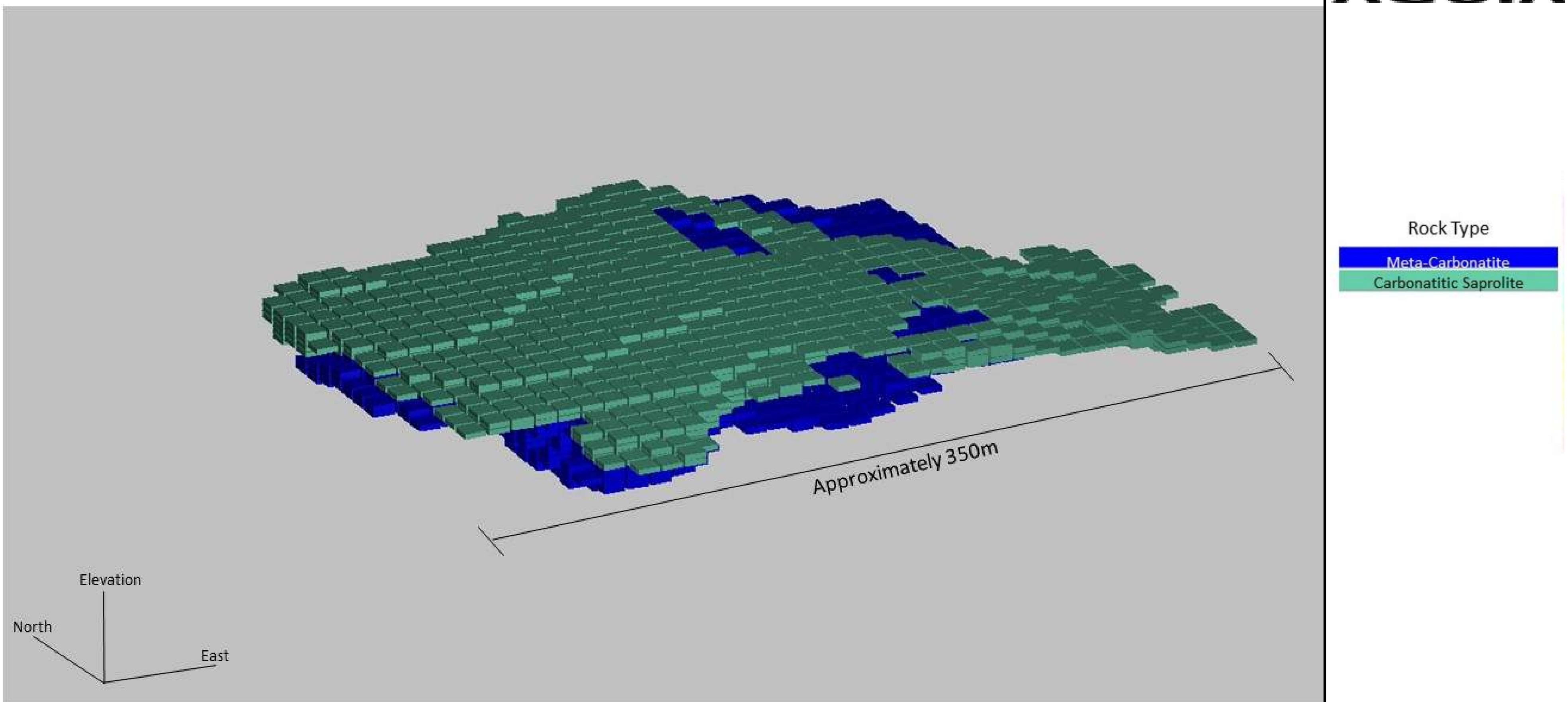

FIGURE 8.7

Perspective View
Joca Tavares Block Model
Aguia Resources Ltd.
Três Estradas PEA

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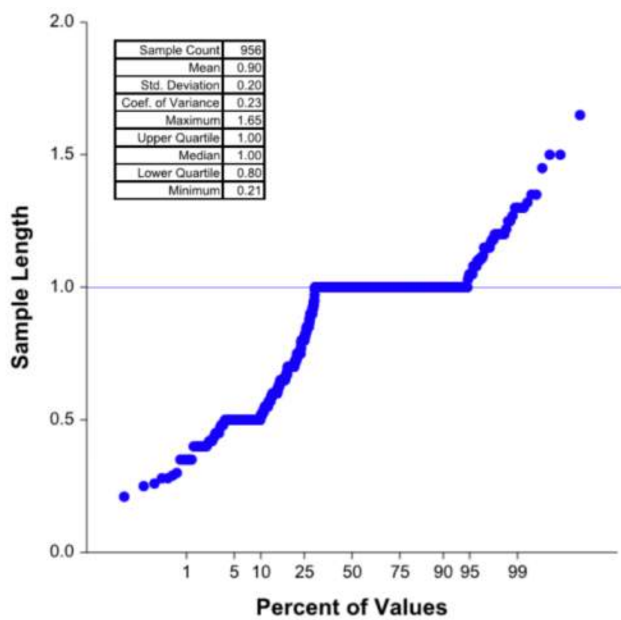
Table 8-14 Summary Statistics of Oxide Grades for Mineralized Domains

Domain	Rock Code	Stats*	P_2O_5	CaO	Al_2O_3	Fe_2O_3	MgO	SiO_2
CBTSAP	100	Average	7.87	11.89	8.49	22.28	2.34	33.73
		Std. Dev.	3.87	7.04	5.00	7.75	3.98	15.07
		Minimum	0.64	1.08	0.40	8.62	0.05	1.23
		Maximum	18.76	29.50	19.50	39.20	15.40	78.40
		Count	152					
CBT	200	Average	3.73	27.99	0.88	8.95	14.51	6.83
		Std. Dev.	1.21	3.94	2.32	3.22	1.73	7.89
		Minimum	1.65	4.35	0.10	3.80	5.02	0.24
		Maximum	11.37	32.50	18.9	31.60	16.90	46.5
		Count	537					

*Length-weighted averages

Aguia has composited all assay intervals for the two domains to 1.0-meter lengths. Figure 8.8 shows the cumulative distribution of assay sample lengths. The cumulative frequency plot shows that 92% of all mineralized samples have a sample length less than or equal to 1.0m and approximately 65% of the samples are 1.0m in length. Millcreek considers the 1.0-meter composite length to be an appropriate length for sample composites.

Figure 8-8, Sample Length Probability



Aguia has not employed any grade capping to limit the influence of high grade outliers. Millcreek reviewed probability plots for each of the oxides and found only one or two outliers within each of the two mineralized domains. Further review of the mean grade relationships found that these few outliers had no significant impact to the dataset. Table 8.15 presents the length-weighted averages and summary statistics for each of the six oxides within the two mineralized domains following compositing.

Table 8-15 Summary Statistics of Composite Grades for Mineralized Domains

Domain	Rock Code	Stats*	P_2O_5	CaO	Al_2O_3	Fe_2O_3	MgO	SiO_2
CBTSAP	100	Average	7.29	14.12	7.28	20.39	4.04	29.64
		Std. Dev.	3.90	8.03	5.24	8.30	5.23	16.34
		Minimum	0.64	1.08	0.20	4.50	0.10	1.43
		Maximum	18.76	30.60	19.50	37.20	16.50	71.28
		Count	142					
CBT	200	Average	3.73	27.98	0.89	8.96	14.50	6.84
		Std. Dev.	0.96	3.45	1.76	3.02	1.57	7.18
		Minimum	1.89	7.45	0.13	4.59	7.10	0.26
		Maximum	10.47	32.40	14.29	31.41	16.90	44.55
		Count	501					

*Length-weighted averages

8.3.5 Variography and Grade Estimation

Aguia performed a series of variograms and variogram maps in GEMS mining software to model the spatial continuity of the six oxides (P_2O_5, CaO, Al_2O_3, Fe_2O_3, MgO, SiO_2). Search ellipsoids and different orientations for strike, dip and plunge were evaluated. The test results and selected variograms are presented below in Table 8.16. The variography studies were performed using the composites of carbonatite (CBT**)**. Variography shows a preference in orientation that is aligned to the trend of the kimberlite breccias that extend southwest from the carbonatite. The variograms were normalized before running the resource estimation.

Table 8-16 Variogram Parameters for CBT

Variable	GEMS Rotation (ADA)			Variogram Model							Comments
	Azimuth	Dip	Azimuth	Nugget	Str. No.	Type	CC	Strike	Width	Vertical	
P_2O_5%	50	0	140	0.05	1	Spherical	0.25	100.00	60.00	1.50	Normalized Variogram
	50	0	140		2	Spherical	0.70	160.00	120.00	5.00	
CaO%	50	0	140	0.05	1	Spherical	0.95	200.00	140.00	8.80	Normalized Variogram
Al_2O_3%	50	0	140	0.05	1	Spherical	0.95	90.00	105.00	4.20	Normalized Variogram
Fe_2O_3%	50	0	140	0.06	1	Spherical	0.94	156.00	120.00	9.00	Normalized Variogram
MgO%	50	0	140	0.15	1	Spherical	0.85	180.00	110.00	8.00	Normalized Variogram
SiO_2	50	0	140	0.15	1	Spherical	0.85	112.00	115.00	8.00	Normalized Variogram

Grade estimation was completed using ordinary kriging interpolation for the CBT domain and ID2 was used for the CBTSAP domain. All estimations are based on 1.0 m composites on a homogeneous block model with unitary dimensions of 10m N, by 10m E, and 2.5 m in elevation. Three estimation passes are used with progressively relaxed search ellipsoids and data requirements based on the variography:

- **Measured**: Blocks estimated in the first pass using 30% of the distance of variogram range and based on composites from a minimum of three boreholes;
- **Indicated**: Blocks estimated in the first two passes within 50% of the distance of the variogram range and based on composites from a minimum of two boreholes; and
- **Inferred**: All remaining blocks within the wireframe limits not classified in the first two estimation passes using the full range of distance in the variogram range for CBT and two times the variogram range in a fourth pass for CBTSAP.

In all four passes, the number of composites per drill hole is unconstrained.

Table 8.17 presents the in-situ resource estimate for the geologic block model. This is the in-place estimate without consideration for mining method, recovery, processing or economic constraints. The in-situ estimate is based on the above stated parameters for estimation and classification of the phosphate mineralization and serves as the basis for the Mineral Resource Statement presented in Section 8.3.7.

Table 8-17 In-Situ Resource for the Joca Tavares Phosphate Deposit

Domain	Resource Classification	Volume (m^3 X 1,000)	Density (T/m^3)	Resource Tonnes	Grade (wt. %)					
					P_2O_5	CaO	MgO	Fe_2O_3	SiO_2	Al_2O_3
CBTSAP	Measured	54.2	1.74	94,295	7.05	11.13	5.95	15.98	26.97	6.82
	Indicated	114.1	1.74	198,447	6.96	14.01	4.01	19.48	30.66	7.08
	Inferred	92.3	1.74	160,589	7.36	14.91	2.10	22.18	35.91	8.17
	Sub-Total	**260.5**	**1.74**	**453,331**	**7.12**	**13.73**	**3.74**	**19.71**	**31.75**	**7.41**
CBT	Measured	302.8	2.84	859,810	3.60	28.29	14.67	9.01	6.34	0.65
	Indicated	478.1	2.84	1,357,825	3.82	27.86	14.55	8.97	8.10	1.70
	Inferred	69.1	2.84	196,301	3.83	27.81	14.27	8.84	9.63	2.06
	Sub-Total	**850.0**	**2.84**	**2,413,936**	**3.75**	**28.01**	**14.57**	**8.97**	**7.60**	**1.36**
TOTAL		**1,110.5**	**2.58**	**2,867,267**	**4.28**	**25.75**	**12.86**	**10.67**	**11.42**	**2.31**

The estimated in-situ resource identifies 2.9Mt of material with an average grade of 4.28% P_2O_5 using a minimum cut-off of 3.0% P_2O_5. Approximately 16% of the deposit (0.45Mt) is hosted in the saprolite (CBTSAP) overlying the carbonatite. The carbonatite (CBT) represents 84% of the deposit (2.41Mt).

8.3.6 Model Validation

Millcreek has conducted an audit of the block model prepared by Aguia and of the resources estimated from the model. Millcreek loaded the Joca Tavares block model into MineSight®. The Millcreek audit and validation of the Joca Tavares block model consisted of the following steps:

1. Drilling data was loaded into MineSight® to compare block/drill hole grade relationships in cross section view. A visual inspection of seven sections showed strong correlation between drill hole assays and composited values in the model. Three examples of cross sections viewed through visual inspection are shown in Figure 8.9
2. Millcreek completed a separate estimate in MineSight following the parameters used by Aguia. Our own resource estimate was within 4% of Aguia's estimate.
3. Grade estimation was tested by systematically removing drilling data from the model and evaluating the interpolated values with the posted values for drill holes removed from the model. 12 drill holes were tested this manner in four separate estimation runs. The largest difference observed between posted and interpolated values was 0.7% resulting in a 0.1% difference for an estimation run.

4. The block model was evaluated using a series of swath plots. Swath plots were used to compare grade distribution from the ordinary kriging model to nearest neighbor (NN) searches on drill hole composites and estimations made from inverse distancing squared (ID2).

   On a local scale, the NN search does not provide reliable estimations of grade but, on a much larger scale, it represents an unbiased estimation of the grade distribution based on the underlying data. Therefore, if the model estimation completed by ordinary kriging is unbiased, the grade trends may show local fluctuations on a swath plot but the overall trend should be similar to the NN distribution of grade.

   Three swath plots are shown in Figure 8.10

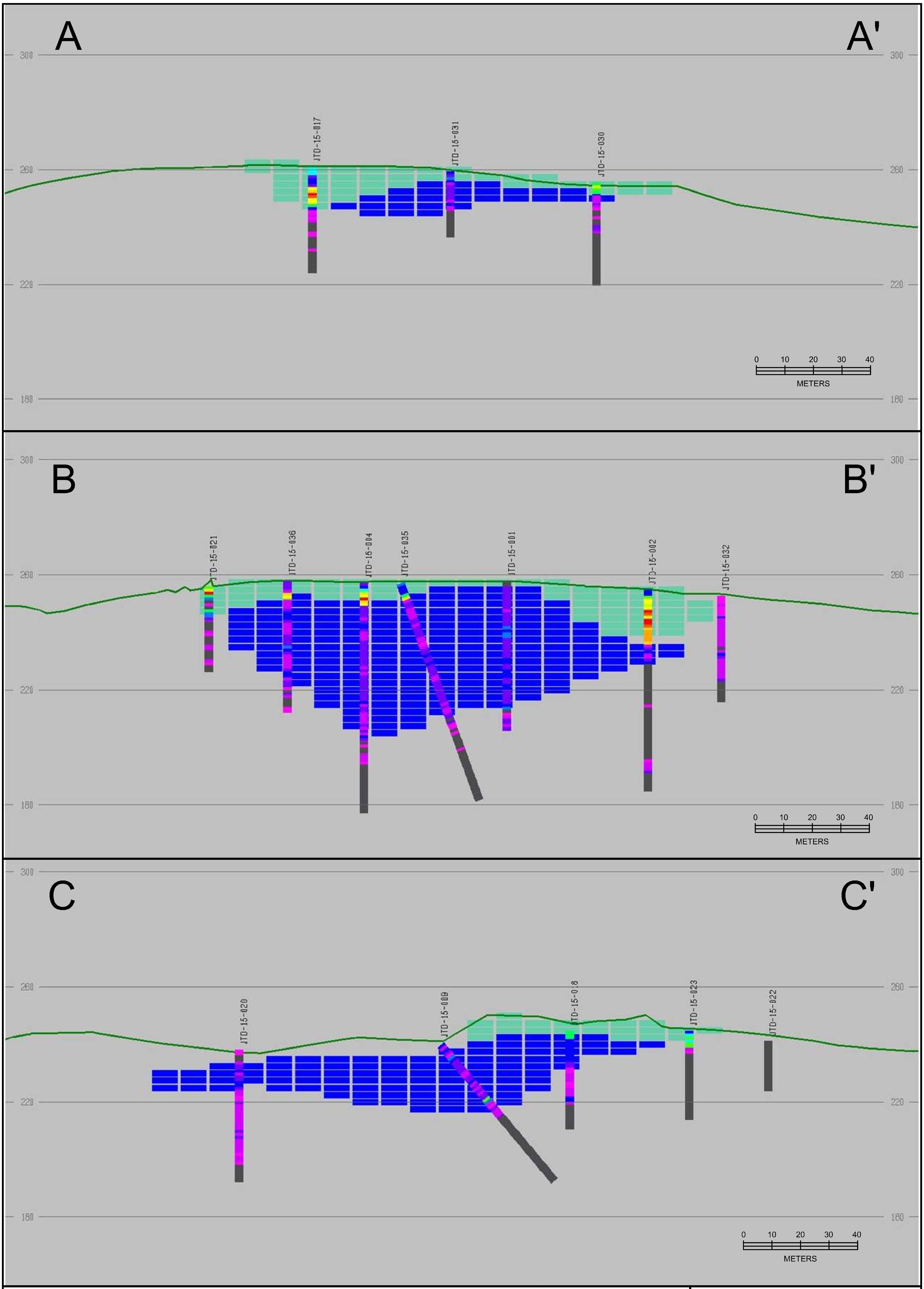
5. A separate estimate using ID2 was made of the block model to evaluate the kriging estimation. The ID2 model used a three NN search. There is an overall difference of 6% in values comparing the kriging estimation completed by Aguia with the ID2 estimates completed by Millcreek.

8.3.7 Mineral Resource Statement

The JORC Code defines:

"A 'Mineral Resource" is a concentration or occurrence of solid material of economic interest in or on the Earth's crust is such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The phrase "reasonable prospects for eventual economic extraction" implies that the quantity and grade estimates meet certain economic thresholds, and that the mineral resources are reported at an appropriate cut-off grade that takes into account the extraction method and processing recovery. Millcreek considers the phosphate mineralization at the Joca Tavares phosphate deposit to be amenable to extraction using open-pit mining methods. Millcreek has used the Lerchs-Grossman optimizing algorithm to evaluate the profitability of each resource block in the model based on its value. Optimization parameters are summarized in Table 14.18 and are derived from subsequent sections of this study that identify the mining, processing, and economic constraints. Though mineral processing at Três Estradas will employ recovery of calcite as a byproduct, the carbonate fraction contained within the carbonatite at Joca Tavares is primarily dolomite. Recovery of dolomite and potential marketing of dolomite has not yet been investigated. Pit optimization for Joca Tavares only considers recovery of P_2O_5.



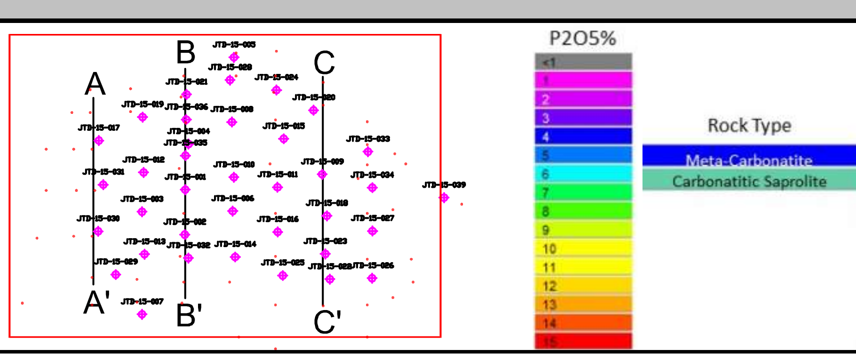


FIGURE 8.9

Representative Cross Sections
Joca Tavares Block Model
Aguia Resources Ltd.
Três Estradas PEA

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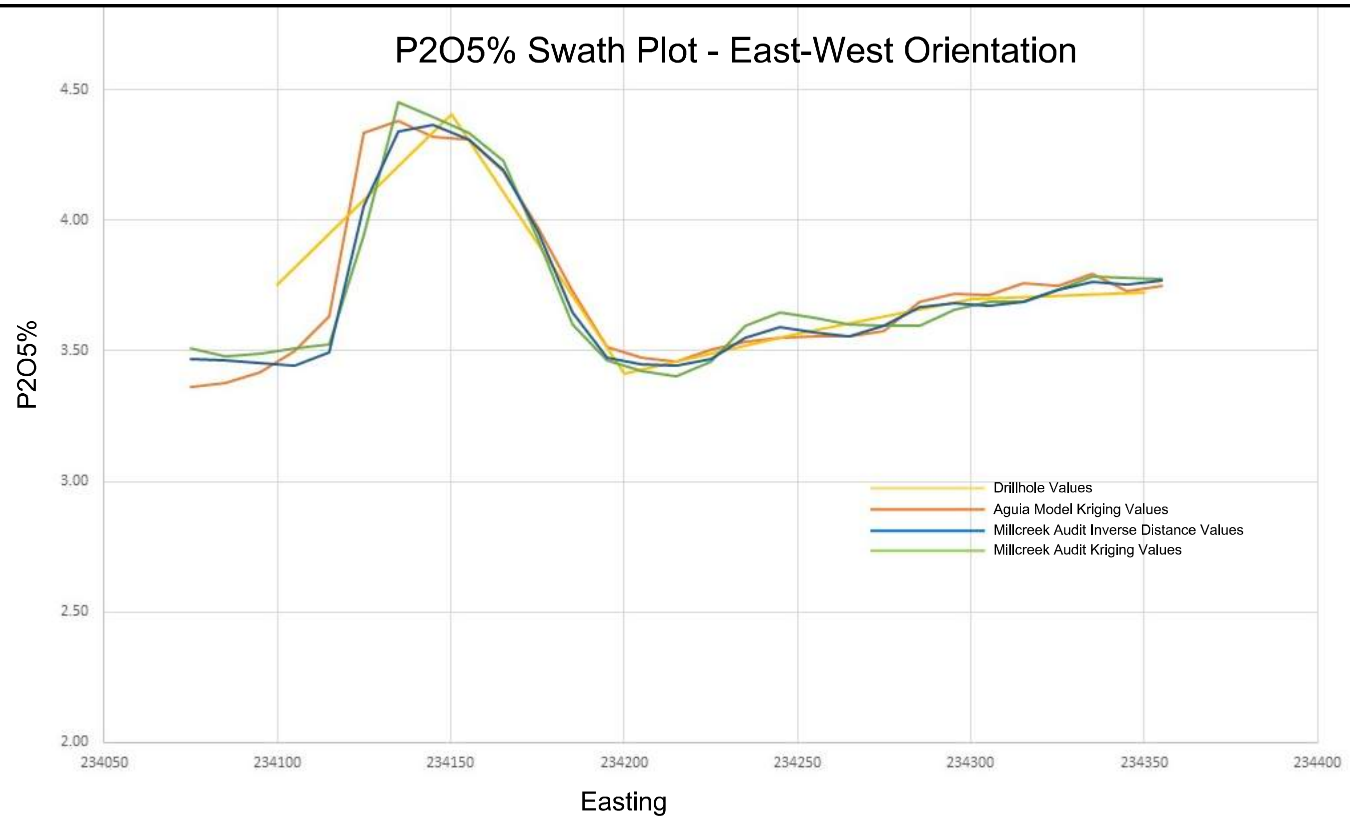

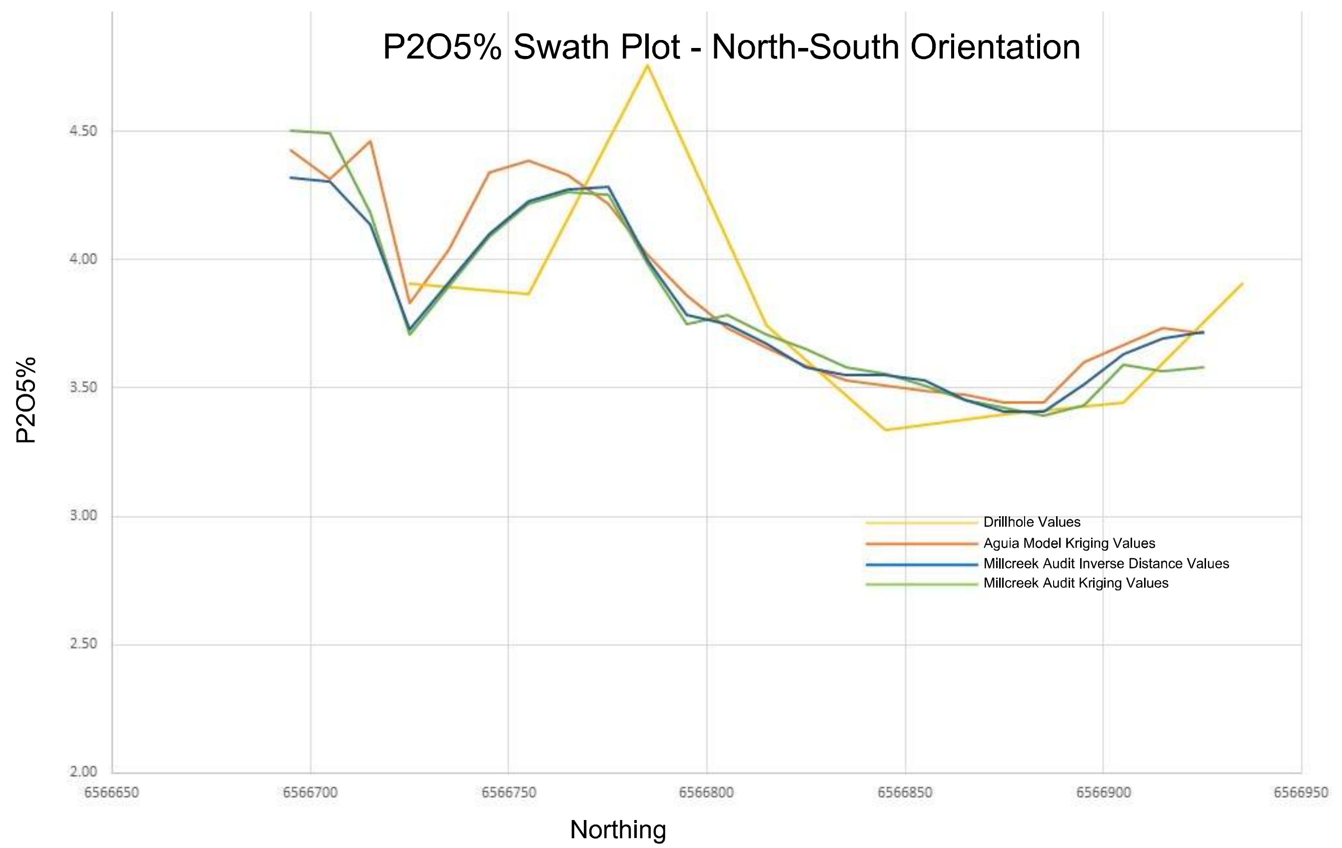

AGUIA

FIGURE 8.10

Evaluation Swath Plots
Joca Tavares Block Model
Aguia Resources Ltd.
Três Estradas PEA

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Table 8-18 JT Pit Optimization Parameters

Parameters	Value
Mining Recovery/Mining Dilution	100 / 0
Process Recovery P_2O_5 Saprolite	80%
Process Recovery P_2O_5Fresh	84%
Concentrate Grade Saprolite	31.0%
Concentrate Grade Fresh Rock	30.2%
Overall Pit Slope Angle Saprolite/Fresh Rock	45 / 45 Degrees
Mining Cost (US$/tonne Mined)	1.34
Process Cost (US$/tonne ROM)	4.79
G&A (US$/tonne of ROM)	0.82
Hauling Cost of ROM to TE (85km @ R$ 0.20 / tkm)	$4.47
Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)	$250
Royalties - Gross	2%
CFEM Tax - Gross	2%
Marketing Costs - Gross	2%
Exchange Rate (US$ to R$)	3.8

Using the Lerchs-Grossman algorithm, Millcreek has developed an optimized pit shell using the above parameters. The optimized pit shell captures the resources estimated in the block model that have reasonable prospects for economic extraction. The pit optimization results are used solely for the purpose of testing the "reasonable prospects for economic extraction" and do not represent an attempt to estimate mineral reserves. Mineral reserves can only be estimated with a further detailed level of study. There are no mineral reserves being reported in this study for the Joca Tavares deposit. Table 8.19 presents the Mineral Resource Statement for the Joca Tavares phosphate deposit, audited and confirmed by Millcreek.

Table 8-19 Audited Mineral Resource Statement, Joca Tavares Phosphate Deposit, Millcreek Mining Group, June 24, 2016

Resource Classification	Domain	Tonnage (T X 1,000)	P_2O_5 (%)	P_2O_5 as Apatite (%)
Measured	**CBTSAP**	92	7.07	16.75
	CBT	823	3.64	8.61
Total Measured Resources		**915**	**3.98**	**9.43**
Indicated	**CBTSAP**	191	7.28	17.25
	CBT	1,315	3.87	9.18
Total Indicated Resources		**1,506**	**4.31**	**10.20**
Inferred	**CBTSAP**	147	7.96	18.86
	CBT	182	3.94	9.34
Total Inferred Resources		**329**	**5.74**	**13.59**

* Mineral resources are not mineral reserves. And have not demonstrated economic viability. All numbers have been rounded to reflect relative accuracy of the estimates. Mineral resources are reported within a conceptual pit shell at a cut-off grade of 3% P_2O_5. Optimization parameters are stated in Table 8.18

The Audited Mineral Resource identifies 2.75Mt of material with an average grade of 4.37% P_2O_5 using a minimum cut-off of 3.0% P_2O_5.

The accuracy of resource and reserve estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources or reserves will be recoverable.

9 METALLURGICAL TESTING

9.1 METALLURGICAL TESTING PROGRAMS AND SUMMARY RESULTS

There have been four metallurgical testing programs performed on the Aguia Metais Três Estrada deposit since 2012. A summary of the test programs and results are presented in Table 9.1.

The first two studies were performed in 2012 by two departments of the Escola Politecnica da Universidade de Sao Paulo, Departamento de Engenharia de Minas e de Petroleo. The first study was prepared by the Laboratorio de Caracterizacao Technologica - LCT-EPUSP and the second, a complementary study, by the Grupo de Pesquisa em Tratamento de Minerios - GPTM – EPUSP. The first study was entitled "Technological Characterization Study on Phosphate Ore Samples" and the second was entitled "Complementary Study on the Concentration of Phosphate Ores". The characterization study included chemical and mineralogical analyses, mineral separation by size fraction using heavy liquids, and magnetic separation. Mineral associations and liberation studies by size fraction were performed, and potential grade recovery curves were generated for P_2O_5. The complementary studies included the determination of the best process route to recover P_2O_5 into a saleable concentrate, focusing on flotation and magnetic separation.

In 2014, HDA Services performed a study that included comminution, magnetic separation, desliming and then flotation at different particle size distributions. Tests were performed on both fresh carbonatite and saprolite samples using conventional mechanical flotation cells.

In 2015, SGS Canada Inc. performed a similar study, which included comminution, desliming, flotation and magnetic separation of the flotation tailings to obtain a saleable agricultural lime product. The majority of the flotation work was performed using mechanical flotation cells and included pyrite flotation followed by flotation of deslimed feed and slimes feed separately. Two column flotation tests were performed on each of the fresh composite samples, the deslimed sample and the slimes sample, for a total of 4 tests.

In 2016, Eriez Flotation Division performed a flotation study comparing the performance of mechanical and column flotation cells on samples of fresh carbonatite and oxidized carbonatite, saprolite mineralized samples from the Tres Estradas deposit. The objective of the study was to produce separate fresh rock and oxide concentrates containing a minimum of 30% P_2O_5 with a minimum global recovery of 80% P_2O_5 using column flotation. The fresh carbonatite samples were ground to 212µm and then separated into two size fractions, 212µm x 60µm and 60um x 0µm. The oxidized, saprolite, sample was ground to

212µm x 0µm. Testwork included magnetic separation on feed material prior to flotation, phosphate flotation in mechanical and column flotation cells, magnetic separation on phosphate concentrates and magnetic separation and reverse flotation on phosphate flotation tailings to produce a calcite concentrate for sale.

Table 9.1 Summary of Aguia Metallurgical Testing Programs

Laboratory	Date	Deposit	Report Title	Samples	Testwork Performed	Summary Results	Reported Recommendations
Escola Politecnica da Universidade de Sao Paulo Departamento de Engenharia de Minas e de Petroleo, Laboratorio de Caracterizacao Technologica - LCT- EPUSP	Apr-12	Aguia Metais Tres Estradas	Technological Charaterization Studies on Phosphate Ore Samples	RG-CM-01, Saprolite of Carbonatite, RG-CM-02, Fresh Carbonatite, RG-CM-03, Saprolite of Amphibolite, RG-CM-04, Fresh Amphibolite. Saprolite, auger samples. Fresh rock, drill core.	Mineral analyses. Chemical and mineralogical analysis. Mineral separation by size fraction studies using heavy liquids(TBE=2.95g/cm3) and magnetic separation. Mineral associations and liberation studies by size fraction. Potential grade recovery curves were gnerated for P2O5.		
Escola Politecnica da Universidade de Sao Paulo Departamento de Engenharia de Minas e de Petroleo, Grupo de Pesquisa em Tratamento de minerios - GPTM - EPUSP	Sep-12	Aguia Metais Tres Estradas	Complementary Study on the Concentration of Phosphate Ores	Same source as previous test program. EB-01, EB-02, EB-03, EB-05. EB-02 and EB-05 Fresh Carbonatite, EB-01 and EB-03 Weathered Carbonatite.	Laboratory testing to determine a process route to concentrate the phosphate ore from the Tres Estradas RS, Brazil.	The best process route for EB-02 and EB-05 comprises grinding to P80 of 110 microns, low intensity magnetic separation, desliming at 20 microns followed by flotation. The best process route for EB-01 and EB-03 comprises grinding to 210 microns followed by desliming at 20 microns. The ore is conditioned at 36% solids with starch at a pH of 10.6-11.0 and then floated in a rougher, cleaner circuit. The cleaner concentrate is the final concentrate.	EB-02 and EB-05 yielded a concentrate of 3.7% mass with a grade of 34.9% P2O5. Overall recovery was approximately 30% with 37% loss to slimes and 33% lost to flotation tailings. To reduce losses, products should be recycled with 2 stages of cleaning. EB-01 and EB-03 yielded a concentrate of 22 - 32% mass and a grade of 78.2 - 82.8% P2O5. 20% of the P2O5 is lost to slimes and 10% to flotation tailings.
HDA Servicos S.S. Ltda.	May-14	Aguia Metais Tres Estradas	Comminution and Flotation Testwork for Rio Grande Project	RG-EB-06, Oxidized Saprolite Rock and RG-EB-07, Fresh Meta-carbonatite Rock. Samples were composites of	Comminution and classification testing including Bond work indices, JK Drop Weight tests, batch grinding, specific Gravity determination, magnetic separation and classification for removal of -20micron fine material (slimes) in preparation for flotation.	A series of process routes were investigated including crushing, rod mill grinding and ball mill grinding and magnetic separation. The objective was to achieve the required liberation for flotation while minimizing the amount of slimes generated, which are losses in recovery. EB-06 - drop weight tests not performed due to the fine size of feed material. EB-06 results: BWi = 4.9kWh/t at 250microns and EB-07 was 12.2kWh/t at 105 microns.	The selected flow sheet included staged crushing, staged grinding, wet low intensity magnetic separation and desliming prior to flotation. Recommended further pilot plant testing to determine realistic mass and metallurgical recovery figures.
HDA Servicos S.S. Ltda.	Jun-14	Aguia Metais Tres Estradas	Comminution and Flotation Testwork for Rio Grande Project	RG-EB-06, Oxidized Saprolite Rock and RG-EB-07, Fresh Meta-carbonatite Rock	Flotation testing.	Selected best test results for EB-06 yielded a 30.8% P205 concentrate grade with 58.4% P2O5 recovery. The best results for EB-07 yielded a 27% P2O5 concentrate grade with a 58.1% P2O5 metallurgical recovery.	The best process route for EB-06 comprises grinding to P80 of 212 microns, desliming at 10 microns followed by flotation, includng rougher, cleaner and scavenger stages. The best process route for EB-07 comprises grinding to P80 of 106 microns, low intensity magnetic separation, desliming at 10 microns followed by flotation, including rougher, cleaner and recleaner stages. Recommended further pilot plant testing to determine realistic mass and metallurgical recovery figures.
SGS Canada Inc.	May-15	Aguia Metais Tres Estradas	A Scoping Level Flotation Test Program on Samples from the Tres Estrada Phosphate Project, prepared for Aguia Resouces Limited, Final Report	Fresh Caronatite Samples: Drill holesTED-11-006, TED-11-007, TED-11-010. Oxidized Carbonatite Samples, Drill holes TET-11-022, TET-11-024, TET-12-123, TET-12-124, TET-12-125.	Comminution and classification testing including Bond work indices, SMC testing, and classification for removal of -20micron fine material (slimes) in preparation for flotation.	SMC breakage indices for the fresh carbonatite Sample TED-11-006 and a composite of Samples TED-11-007 and TED-11-010 were 57.3 and 54.6 respectively. Bond work indices for fresh caronatite samples TED-11-006 and a compostite of TED-11-007 and TED-11-010 and the oxidized TET series composite were 9.9kWh/t, 9.5kWh/t and 6.4kWh/t respectively. The oxidized composite sample was very soft, consisting of fine saprolite. It was not possible to perform SMC tests on the saprolite as the particle size of the sample was too small.	
SGS Canada Inc.	May-15	Aguia Metais Tres Estradas	A Scoping Level Flotation Test Program on Samples from the Tres Estrada Phosphate Project, prepared for Aguia Resouces Limited, Final Report	80 kg of the fresh carbonatite samples were stage ground to 106microns and deslimed in 10kg batches and split into three composites G1-G3. Similarly, 10kg of the oxidized carbonatite samples stage ground to 212microns and were composited into a single sample, G4. The samples were deslimed by screening at 20microns and split into charges for flotation testing.	A total of 28 flotation tests were performed on the composite samples using mechanical flotation cells. Two column flotation tests were performed on each of the fresh composite samples, one on the deslimed feed and one on the slimes. A total of 4 flotation tests were performed on deslimed feed from the oxidized composite and 4 cleaner flotation tests were performed on the oxidized slimes fraction.	The flotation flow sheet selected for the **fresh** composites included a deslimed feed flotation circuit and a -20um slimes flotation circuit. The concentrates from the two circuits were then combined. Both circuits include a pyrite rougher-cleaner circuit followed by an apatite rougher-cleaner circuit. The best results for the fresh carbonatite composites were obtained from tests F17 and F15 on delimed feed and slimes respectively. The combined concentrate graded 22.9% P2O5 with 69% recovery. The best results for oxidized carbonatite were tests F23 and F28 on deslimed feed and slimes respectively. The combined apatite concentrate graded 29.6% P2O5 with 75% P2O5	Recommendations include additional flotation testing on the fresh carbonatite slimes. Flotation testing of ground material without desliming, locked cycle testing on both deslimed feed and slimes, and further column flotation work, but at a pilot scale. Then variability flotation on multiple composites from across the deposit to investigate differences in grade, mineralogy, spatial variation and alteration.

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Table 9.1 Summary of Aguia Metallurgical Testing Programs (continued)

Laboratory	Date	Deposit	Report Title	Samples	Testwork Performed	Summary Results	Reported Recommendations
SGS Canada Inc.	May-15	Aguia Metais Tres Estradas	A Scoping Level Flotation Test Program on Samples from the Tres Estrada Phosphate Project, prepared for Aguia Resouces Limited, Final Report		The test F17 rougher tailings was subjected to wet high intensity magnetic separation WHIMS, using an Outotec Slon 100 and an Eriez WHIMS, to investigate the generation of a saleable carbonate concentrate by removing the iron bearing minerals.	The non-magnetic concentrate graded 44.3% CaO and 2.12% Fe2O3 with 82% CaO recovery using the SLon 100.	
Eriez Flotation Division	Jun-16	Aguia Metais Tres Estradas	Final Report	Fresh carbonatite samples	Series of flotation tests were performed on fresh carbonatite samples ground to 212um x 60um and 60um x 0um using mechanical flotation cells. Tests 1 - 8 were rougher only and tests 9, 10 and 12 of the fresh rock set included one stage of cleaner flotation, also in mechanical cells.	The results for flotation of the fresh carbonatite samples ground to 212 x 60 microns were low. Rougher flotation followed by 1stage of cleaning yielded a concentrate grade of 18.7% P2O5 with a recovery of 50.5% P2O5 into 31.7% of the mass. For fresh rock sample ground to -60 um, the resulting concentrate grade was 9.3% P2O5 with 86.2% recovery into 48.4% of the feed mass.	The flotation tests using mechanical flotation cells were generally unsuccessful.
Eriez Flotation Division	Mar-16	Aguia Metais Tres Estradas	Final Report	Saprolite, oxidized carbonatite samples	Series of rougher flotation tests were performed on saprolite samples ground to 212um x 60um and 60um x 0um using mechanical flotation cells.	The best result for flotation of the samples ground to 212um x 60um yielded a concentrate grade of 33.5% P2O5 with 83.3%P2O5 recovery into 32.1% of the feed mass. The best result for samples ground to 60um x 0um yielded a concentrate grade of 19.2% P2O5 with 72.6% recovery into 36.1% of the feed mass.	The saprolite samples were much more amenable to flotation in mechanical cells than the fresh carbonatite. A cleaning stage would improve the concentrate grade.
Eriez Flotation Division	Apr-16	Aguia Metais Tres Estradas	Final Report	Fresh carbonatite samples.	A series of flotation tests were performed on fresh carbonatite and saprolite samples ground to 212um x 0um using column flotation cells.	The best flotation results for the fresh carbonatite samples were achieved using a rougher-cleaner-scavenger-2nd cleaner column flotation circuit. The overall circuit produced a concentrate grading 30.25% P2O5 with 84.6% P2O5 recovery into 11.8% of the mass.	Column flotation produced much better results than the mechanical cells. The rougher- cleaner- cleaner scavener-2nd cleaner circuit gave acceptable results. It is recomended that this circuit be tested during the next test program.
Eriez Flotation Division	Apr-16	Aguia Metais Tres Estradas	Final Report	Saprolite, oxidized carbonatite samples	A series of rougher flotation tests were performed on saprolite samples ground to 212um x 0um using column flotation cells.	The best result for rougher column flotation of the saprolite sample was a concentrate grading 31.1% P2O5 with 80.1% P2O5 recovery into 30% of the feed.	Rougher flotation of saprolite sample yielded acceptable concentrate grades though the mass recovery was high at 30% of the feed. Addition of a cleaning stage would improve both the concentrate grade and the final mass recovery.
Eriez Research and Development	Mar-16	Aguia Metais Tres Estradas	Final Report	Fresh rock and saprolite samples	Combinations of magnetic separation and flotation tests were performed by Eriez to investigate the potential of upgrading the CaO concentration and reducing the iron concentration of the fresh rock flotation tailings to produce a by-product agricultural lime product for sale.	A combination LIMS and MIMS to concentrate the calcite in the non-magnetic fraction followed by amine flotaion to remove Iron and mica resulted in a calcite concentrate grading 48.5% CaO, with a CaO recovery of 83.1% and a mass recovery of 70.1%	The combination of LIMS and MIMS, followed by amine flotation for cleaning of the iron and mica from the concentrate is the recommended flow sheet for process design.

9.2 METALLURGICAL SAMPLE CHARACTERIZATION

9.2.1 2012 LCT-EPUSP Test Program

Four metallurgical test composite samples were provided to LCT-EPUSP by Aguia for testing, RG-CM-01, saprolite derived from carbonatite, RG-CM-02, fresh carbonatite, RG-CM-03, saprolite derived from amphibolite and RG-CM-04, fresh amphibolite. The samples were prepared by crushing, milling and screening. The fine material, slimes, from each of the samples were separated by wet screening on a 20µm screen and treated separately during flotation. The target flotation feed particle size for the fresh carbonatite samples was 90% passing 74µm. The saprolite samples were ground to 90% passing 212µm.

The samples used in the second study by GPTM-EPUSP were from the same source as the previous testwork. Again, the samples were EB-01, EB-02, EB-03, EB-05. EB-02 and EB-05 Fresh Carbonatite, EB-01 and EB-03 Weathered Carbonatite. Tables 9.2 and 9.3 present the results of chemical analyses of the flotation feed samples and the minus 20µm fractions respectively.

The minus 20µm fractions in each of the samples was very significant. The mass and P_2O_5 recovery losses to slimes of the saprolite samples, EB-01 and EB-03 were 39% and 25.7%, and 21.5% and 16% respectively. The mass and recovery losses to slimes of the fresh samples, EB-02 and EB-04 were 51.6% and 44.5%, and 44.3% and 41.5% respectively.

Table 9-2 Chemical Analysis of Metallurgical Samples - + 20µm fraction

Sample	Grades (wt%)								Ratio
	P_2O_5	CaO	SiO_2	Al_2O_3	Fe_2O_3	MgO	TiO_2	LOI	CaO/P_2O_5
RG-CM_01/EB-01, Saprolite from Carbonatite – P90 212µm	16.2	21.6	23.7	2.52	24.4	1.94	2.30	4.38	1.33
RG-CM-02/ EB-02 Fresh Carbonatite P90 74µm	4.22	37.5	7.15	1.56	7.44	8.13	0.84	31.0	8.87
RG-CM-03/ EB-03 Saprolite from Amphibolite, P90 212µm	3.78	11.0	38.0	8.36	16.6	8.72	4.52	5.22	2.92
RG-CM-04/ EB-05 Fresh Amphibolite, P90 74µm	2.57	16.1	32.8	7.03	15.3	9.78	4.14	6.92	6.27

Table 9-3 Mineralogical Composition of the Samples -20μm Fraction

Sample	Grades (wt%)					Distribution (wt %)				
- 20μm fraction	P_2O_5	CaO	SiO_2	Al_2O_3	Fe_2O_3	P_2O_5	CaO	SiO_2	Al_2O_3	Fe_2O_3
RG-CM_01/EB-01, Saprolite from Carbonatite	15.5	20.9	25.1	3.42	23.3	26.4	26.8	29.2	37.5	26.3
RG-CM-02/ EB-02 Fresh Carbonatite	6.38	37.2	7.66	1.74	6.84	22.8	15.0	16.2	16.8	13.9
RG-CM-03/ EB-03 Saprolite from Amphibolite	4.3	9.88	37.8	8.2	18.3	25.2	19.8	22.0	21.7	24.3
RG-CM-04/ EB-04 Fresh Amphibolite	3.86	19.9	31.1	5.87	12.5	23.3	19.2	14.7	13.0	12.8

Table 9.4 presents the mineral composition of each of the composite samples. The only phosphate bearing mineral in the Três Estradas deposit is apatite.

Table 9-4 Mineral Composition of the Metallurgical Samples

	Samples			
Mineral	EB-01	EB-02	EB-03	EB-04
Apatite	39	10	9	6
Carbonates	-	70	-	11
Oxides (Fe, Ti, Mn)	31	4	9	5
Philosilicates	10	9	32	31
Quartz + Feldspar	16	2	9	6
Titanite	-	-	9	9
Amphibole	3	3	31	31
Others	1	2	1	1

9.2.2 HDA Test Samples – 2014

Composite samples of the two main Aguia Três Estradas material types were provided to HDA Servicos for comminution and flotation testing. The sample composites were RG-EB-06 and RG-EB-07, representing oxidized cabonatite and meta-carbonatite. The oxidized carbonatite composite samples were sourced from auger holes drilled in the saprolite, while the meta-carbonatite samples were sourced from core drill holes.

9.2.3 SGS Test Samples – 2015

Samples of fresh carbonatite and oxidized carbonatite, saprolite, were provided to SGS by Aguia for testing. The fresh carbonatite samples were sourced from core drill holes TED-11-006, TED-11-007, TED-11-010. The oxidized carbonatite samples were sourced from auger holes TET-11-022, TET-11-024, TET-12-123, TET-12-124, TET-12-125. The samples were stage crushed to 3.35mm, homogenized and split into 10kg charges for testing. The fresh samples were submitted for SMC and Bond ball mill work index testing. The oxidized samples were not suitable for impact testing and were only submitted for Bond ball mill testing. 80 kg of the fresh carbonatite samples were prepared for flotation testing. The samples were stage ground to 80% passing 106µm in 10kg batches, deslimed by wet screening at 20µm and then split into three composites G1-G3. Similarly, 10kg of the oxidized carbonatite samples were stage ground to 212µm and combined into a single composite sample, G4. Table 9.5 contains a list of the core and auger holes and sample weights provided for the composites.

Table 9-5 Summary of Sample Mass by Borehole

Borehole ID	Rock Type	Weight (kg)
TED-11-006	Fresh Rock	97.2
TED-11-007	Fresh Rock	24.2
TED-11-010	Fresh Rock	10.5
Total		**131.9**
TET-11-022	Saprolite	27.6
TET-11-022	Saprolite	33.2
TET-11-022	Saprolite	28.5
TET-11-022	Saprolite	33.9
TET-11-022	Saprolite	25.0
Total		**148.1**

Table 9.6 presents an analysis of each of the rock types. The samples were analyzed using X-ray fluorescence, XRF, with the results reported as oxides.

Table 9-6 SGS Sample Head Analysis

Whole Rock Analysis by XRF %		
Composite	**Fresh Carbonatite**	**Oxidized Carbonatite**
P_2O_5	4.38	11.30
CaO	39.90	14.20
Al_2O_3	1.10	6.85
Fe_2O_3	8.29	20.10
SiO_2	6.80	33.80
MgO	5.59	1.13
Na_2O	0.11	0.13
K_2O	0.51	0.20
TiO_2	0.83	2.80
MnO	0.26	0.61
Cr_2O_3	0.01	0.04
V_2O_5	0.02	0.21
LOI	29.50	7.99
Total	**97.3**	**99.36**

The slimes (- 20 µm) fractions generated during sample preparation were very significant. The slimes fractions for the milled fresh composites, G1, G2 and G3 were 26.3% 21.5% and 21.5% respectively. The slimes fraction for the saprolite, sample was much higher at 48%. The chemical composition of the slimes fractions were very similar to the coarse fractions, which if discarded would result in high losses of P_2O_5. Therefore the slimes fractions have to be processed, either along with the coarse fraction or separately followed by combination of the concentrates. These results are very similar to the earlier sample characterization work performed by EPUSP in 2012.

9.2.4 KEMWorks - 2014

KEMWorks was contracted by Aguia to analyze the past metallurgical test data and to complete a scoping study to develop a preliminary capital cost estimate for the phosphate beneficiation plant, the single super phosphate (SSP) plant and all associated infrastructure. Table 9.7 presents the analyses used by KEMWorks for the scoping study process design. The values selected are from the SGS study and are similar to those determined in the earlier EPUSP and HDA studies.

Table 9-7 KEMWorks Analysis Used for Process Design

Analysis %	Fresh Carbonatite	Oxidized Carbonatite
P_2O_5	4.38	11.3
CaO	39.9	14.2
Al_2O3	1.1	6.85
Fe_2O_3	8.29	20.1
MgO	5.59	1.13
SiO_2	6.8	14.2
TiO_2	0.83	2.8

9.3 COMMINUTION TESTING

Comminution testing was performed, by HDA Servicos, in 2014 and SGS, in 2016, on samples of fresh and oxidized carbonatite and amphibolite samples. Table 9.8 contains a summary of the results. HDA performed JK Tech drop weight tests on the fresh carbonatite and Bond ball mill work index tests on both fresh and oxidized carbonatite. SGS performed JK Tech SMC tests on the fresh carbonatite samples and Bond work index tests on both oxidized and fresh composite samples. The results were similar for both the impact crushing tests and the grinding tests.

Table 9-8 Summary of Comminution Test Results

Sample	BI A*b	SG	SMC DWi kWh/m3	BWi kWh/t	P80µm	Mib kWh/t
HDA JK Tech Drop Weight Test						
Oxidized Carbonatite RG-EB-06		2.94		4.9	205	
Fresh Carbonatite RG-EB-07	47.6	2.78		12.2	84	
SGS – JK Tech SMC Test						
TED-11-006	57.3	2.86	4.99	9.5	118	10.4
TED-11-007/010	54.6	2.92	5.35	9.9	118	10.9
Oxidized Carbonatite				6.2	212	

9.4 FLOTATION

Flotation testing programs have been performed at each stage of the project. The results of these test programs are summarized in Table 9.1 Summary of Metallurgical Testing. The majority of the flotation testing has employed conventional mechanical flotation cells on samples of deslimed phosphate and on the slimes fraction separately. The P_2O_5 recovery results on the fresh carbonatite samples have been low, primarily due to losses of P_2O_5 to the slimes fraction. The most recent testwork by Eriez has focused on flotation of whole material including the slimes fraction utilizing column flotation cells. The best results have been achieved with column flotation cells.

9.4.1 Flotation Reagents

Flotation reagents used have been consistent throughout the testing programs beginning with the original tests performed by EPUSP. The reagents employed and their applications are presented in Table 9.9.

Table 9-9 List of Flotation Reagents used in the Studies

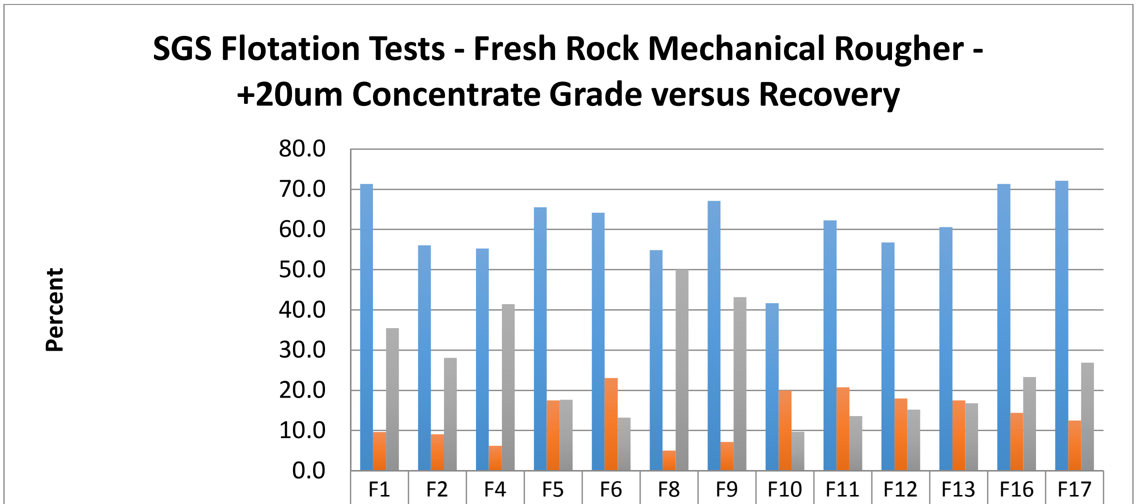
Reagent	Manufacturer	Purpose
MD20544	Akzo Nobel	Apatite collector in Fresh Carbonatite composite
MD20389	Akzo Nobel	Apatite collector for the Oxidized Carbonatite composite
Berol 867		Apatite collector
Saponified FS2	Arizona Chemical	Apatite collector
Flotinor EDA	Clariant Mining Solutions	Mica collector
Cornstarch (corn flour), boiled		Gangue carbonate depressant. NaOH – pH 11 used to gelatinize the corn starch.
CCS-502A	Westvaco	Anionic collector for carbonates, Sulfonated oleic acid
Potassium amyl xanthate, PAX		Sulphide collector
NaOH		pH modifier
CustAmine 1208	Arrmaz	Cationic collector for mica flotation

9.4.2 SGS Flotation Results

SGS performed four series of flotation tests on fresh carbonatite and oxidized, saprolite using mechanical flotation cells and column flotation cells. The samples for the both fresh rock and saprolite were deslimed at 20µm prior to flotation and tests were performed on coarse and slime fractions separately.

Table 9.10 presents the results from a series of Fresh Rock tests performed on the +20µm fraction and Table 9.11 presents the results of flotation tests on the -20µm fraction. Figure 9.1 is a concentrate grade versus recovery curve for the +20µm fraction. The samples were ground to a P_{80} of 102µm and the pH adjusted to 10.5 to 11 for the tests. The tests were primarily rougher flotation tests followed by cleaning stages for the removal of iron and silica. The primary collector used was MD20544 for the phosphate rougher flotation, followed by Flotinor EDA and potassium amyl xanthate, PAX, in the cleaning stages for silica and iron separation respectively. Cornstarch was used in all tests to depress the carbonate.

Table 9-10 SGS Flotation Test Results – Fresh Rock Mechanical Rougher Flotation +20µm Fraction



	F1	F2	F4	F5	F6	F8	F9	F10	F11	F12	F13	F16	F17
Recovery, %P2O5	71.3	56.1	55.3	65.5	64.2	54.9	67.1	41.7	62.3	56.8	60.6	71.3	72.1
Concentrate Grade, %P2O5	9.7	9.1	6.2	17.5	23.1	5.0	7.2	20.0	20.8	18.0	17.5	14.4	12.5
Concentrate Yield, % Feed	35.5	28.1	41.4	17.7	13.2	50.0	43.2	9.7	13.6	15.2	16.8	23.3	26.9

Figure 9-1, SGS Fresh Rock Mechanical Rougher Concentrate +20µm Fraction Grade versus Recovery

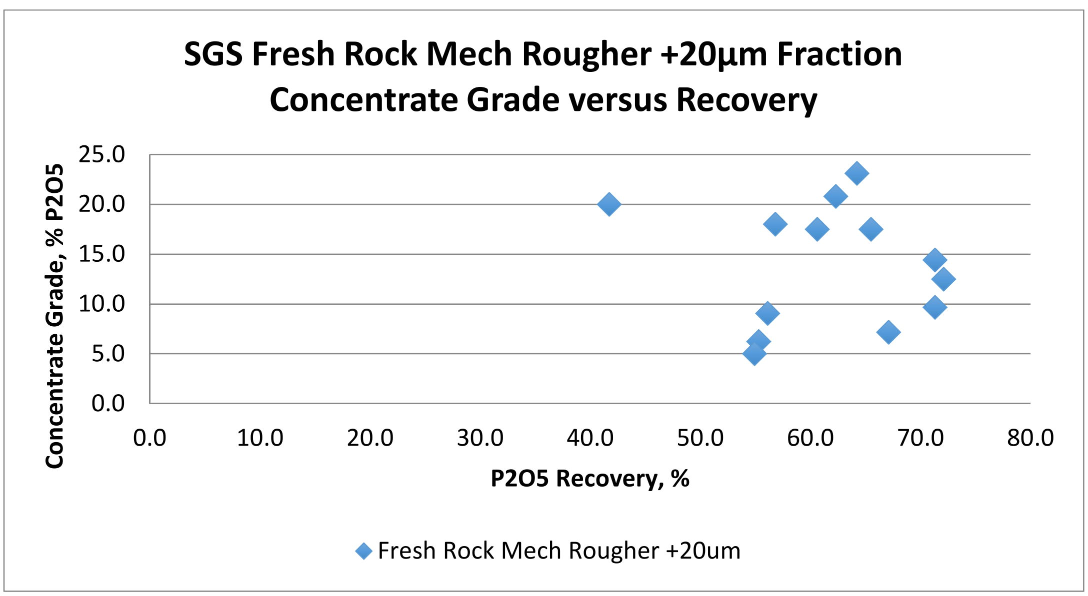
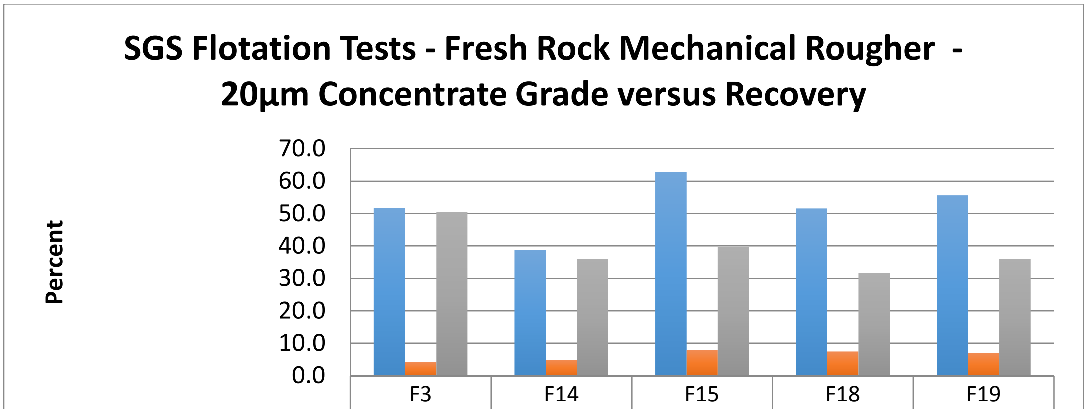


Table 9-11 SGS Fresh Rock Mechanical Rougher Flotation -20µm Fraction

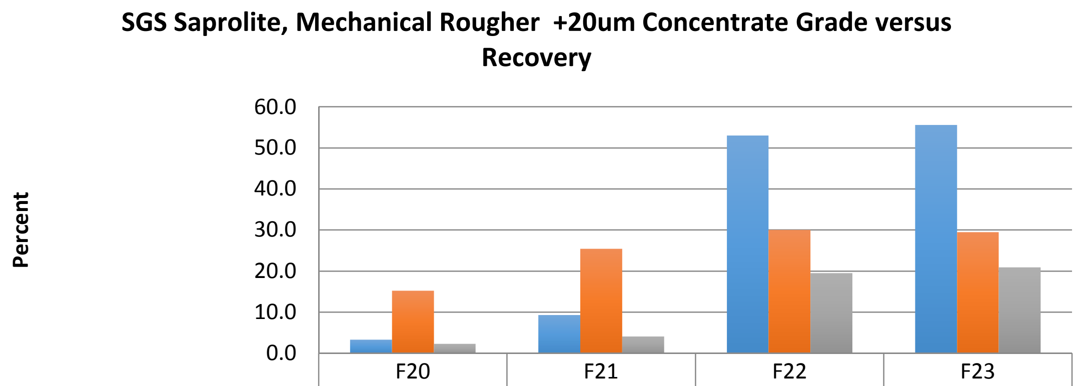


	F3	F14	F15	F18	F19
Recovery, %P2O5	51.7	38.8	62.8	51.6	55.6
Concentrate Grade, %P2O5	4.2	4.9	7.9	7.5	7.1
Concentrate Yield, %	50.5	36.0	39.6	31.8	36.0

The highest rougher recovery for the +20µm fraction was 72.1% P_2O_5 with a concentrate grade of 12.5% P_2O_5 and a concentrate yield of 26.9%. The highest concentrate grade was 23.1% P_2O_5 with a recovery of 64.2%P2O5 and a mass yield of 13.2%. The highest rougher recovery for the -20µm fraction was 62.8% P_2O_5 with a concentrate grade of 7.9% P_2O_5 and a concentrate yield of 39.6%.

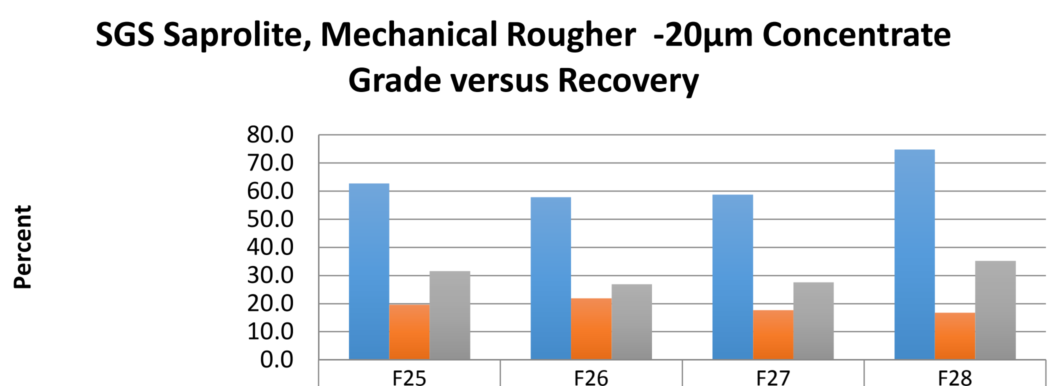
Table 9.12 presents the results of SGS saprolite rougher flotation tests performed on the +20µm fraction and Table 9.13 presents the results of saprolite flotation tests on the -20µm fraction. Figure 9.2 is a concentrate grade versus recovery curve for the +20µm fraction and Figure 9.3 is a concentrate versus recovery curve for the -20µm fraction. The samples were ground to a P80 of 212µm and the pH was adjusted to 9.5 to 10 for the tests. The tests were primarily rougher and cleaner flotation tests for P_2O_5 recovery. The primary collector used for the saprolite tests was MD20389 for phosphate rougher flotation and cornstarch was used for carbonate depression. Cleaner stages were applied to oxide tests F27 and F28, resulting in lower mass recovery and low P_2O_5 recovery, though concentrate grades were improved to 30% P_2O_5 with two stages of cleaning.

Table 9-12 SGS Saprolite Mechanical Rougher Flotation +20µm Fraction



	F20	F21	F22	F23
Recovery, %P2O5	3.3	9.3	53.0	55.6
Concentrate Grade, %P2O5	15.2	25.4	30.0	29.5
Concentrate Yield, % Feed	2.3	4.1	19.5	20.9

Table 9-13 SGS Saprolite Mechanical Rougher Flotation -20µm Fraction



	F25	F26	F27	F28
Recovery, %P2O5	62.8	57.9	58.8	74.8
Concentrate Grade, %P2O5	19.6	21.9	17.7	16.7
Concentrate Yield, % Feed	31.5	26.9	27.6	35.2

Figure 9-2, SGS Saprolite, Mechanical Rougher Flotation Concentrate Grade versus Recovery +20µm Fraction

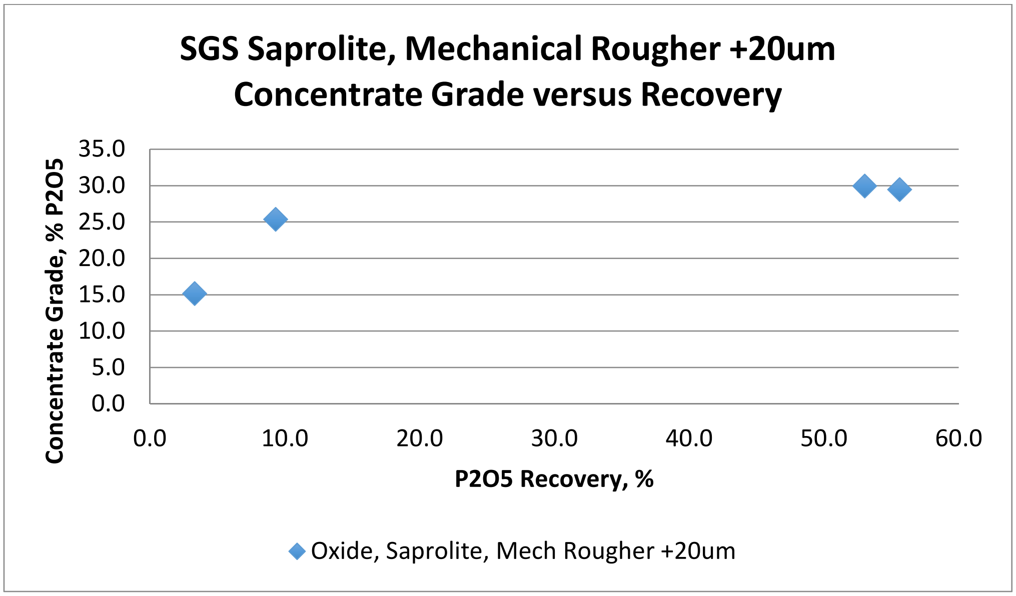
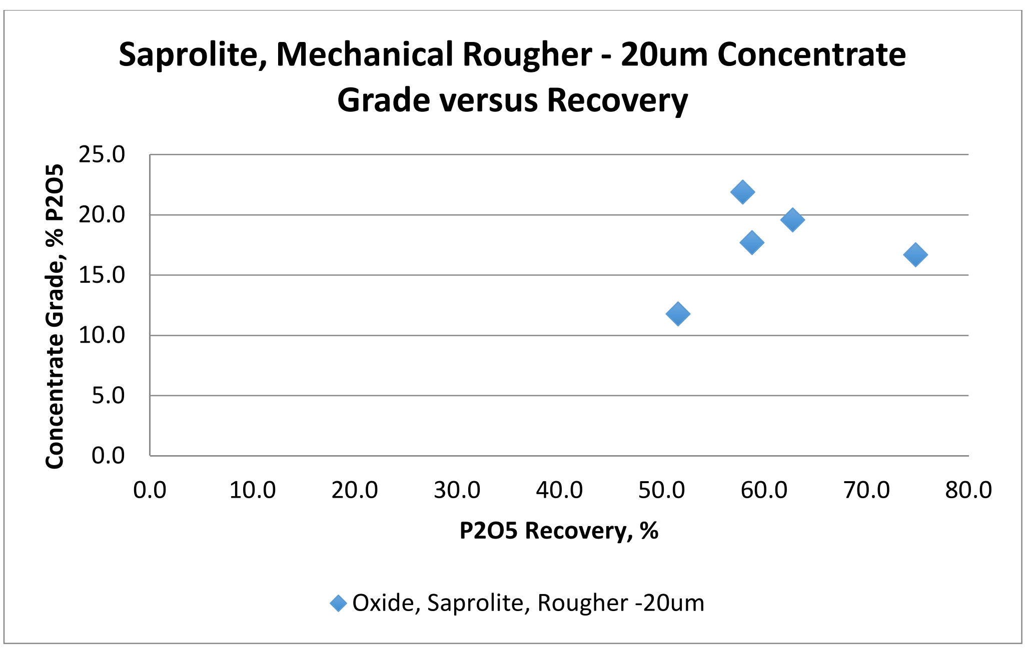


Figure 9-3, SGS Saprolite, Mechanical Rougher Concentrate Grade versus Recovery - 20µm Fraction



Saprolite samples yielded better flotation results than the fresh carbonatite samples. Cleaning of the saprolite rougher concentrate resulted in improved concentrate grade, but also resulted in significant loss of recovery. The best results for the saprolite tests were tests F23 and F28 with rougher concentrate grades and recoveries of 29.5% and 55.6% P_2O_5 respectively and 16.7% and 74.8% P_2O_5 respectively.

9.4.3 Eriez Flotation Test Results

Eriez performed two series of flotation tests on fresh carbonatite and saprolite samples. The first was a series of reagent scoping tests using mechanical flotation cells to identify optimum operating conditions. The second series of tests was conducted with column cells using optimum operating conditions identified in the first series of scoping tests.

Preliminary low and medium intensity magnetic separation tests were also performed on the flotation feed to investigate the effect of removing magnetic materials on flotation performance. The results of the tests were positive magnetic fraction with a mass recovery of approximately 3% containing most of the iron and 99.4% recovery of P_2O_5 to the non-magnetic fraction, however the projected equipment requirements to treat the entire plant feed would not be economic and so the magnetic separation step was discontinued.

Test work was also conducted to produce a calcium carbonate (agricultural limestone) by product.

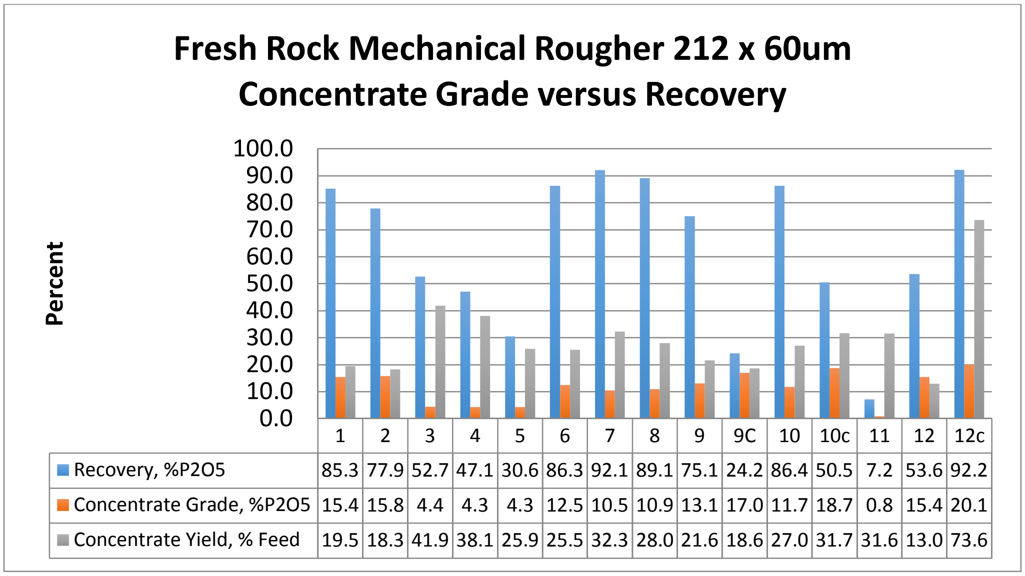
9.4.4 Eriez Mechanical Flotation Test Results

Table 9.14 presents the results from a series mechanical cells rougher flotation tests of fresh carbonatite performed on the 212 x 60µm fraction and Table 9.15 presents the results of flotation tests on the 60 x 0µm fraction. Figures 9.4 and 9.5 are concentrate grade versus recovery curves for the 212 x 60µm and 60 x 0µm fractions respectively.

The flotation reagents used in the Eriez test work were the same as those used in the previous test programs. The collector used for phosphate flotation for the fresh carbonatite samples was MD20544, while MD20389 was used for the saprolite samples. The cleaning stages continued with the same reagents. Cornstarch was used in all tests to depress the carbonate. Tests 3 - 5 of the coarse series and tests 5 – 7 of the fine series were tested with MD20389, typically used for oxide material. These tests resulted in lower recoveries and concentrate grades than with the standard MD20544 collector.

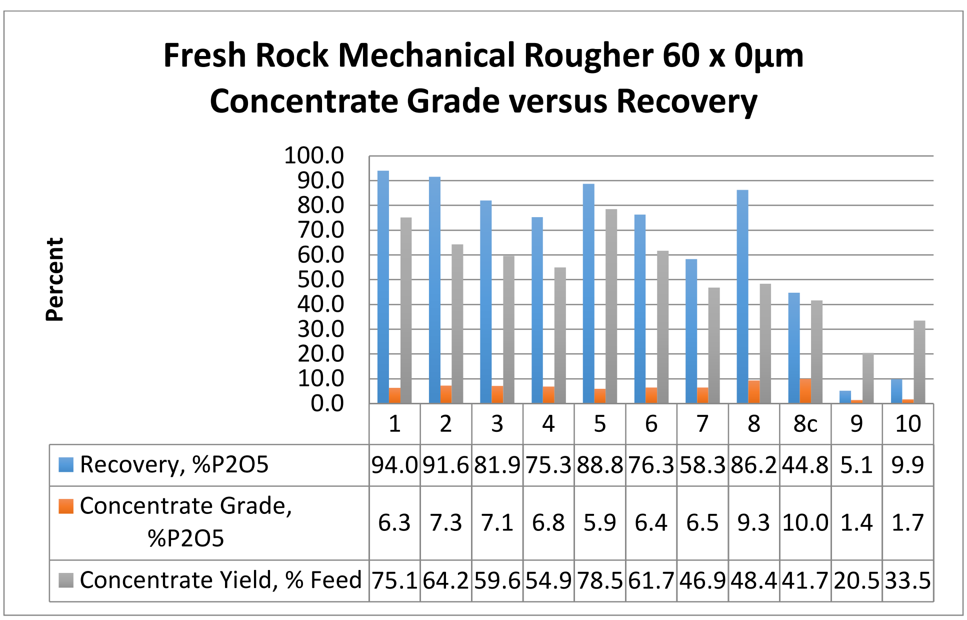
Test 11 of the coarse fraction and tests 9 and 10 of the fine fractions were reverse flotation tests performed using CCS-502A as a carbonate collector and a pH of 5.7 – 6.0. In these tests, the calcium and magnesium carbonates were floated and the phosphate, iron and silica were rejected to the tailings. Table 9.16 contains the results of the reverse flotation tests.

Table 9-14 Eriez Fresh Rock Mechanical Rougher Flotation 212 x 60µm Concentrate Grade versus Recovery



	1	2	3	4	5	6	7	8	9	9C	10	10c	11	12	12c
Recovery, %P2O5	85.3	77.9	52.7	47.1	30.6	86.3	92.1	89.1	75.1	24.2	86.4	50.5	7.2	53.6	92.2
Concentrate Grade, %P2O5	15.4	15.8	4.4	4.3	4.3	12.5	10.5	10.9	13.1	17.0	11.7	18.7	0.8	15.4	20.1
Concentrate Yield, % Feed	19.5	18.3	41.9	38.1	25.9	25.5	32.3	28.0	21.6	18.6	27.0	31.7	31.6	13.0	73.6

Table 9-15 Eriez Fresh Rock Mechanical Rougher Flotation 60 x 0µm Concentrate Grade versus Recovery



	1	2	3	4	5	6	7	8	8c	9	10
Recovery, %P2O5	94.0	91.6	81.9	75.3	88.8	76.3	58.3	86.2	44.8	5.1	9.9
Concentrate Grade, %P2O5	6.3	7.3	7.1	6.8	5.9	6.4	6.5	9.3	10.0	1.4	1.7
Concentrate Yield, % Feed	75.1	64.2	59.6	54.9	78.5	61.7	46.9	48.4	41.7	20.5	33.5

Figure 9-4, Eriez Fresh Rock Mechanical Rougher and Cleaner Concentrate 212 x 60µm, Concentrate Grade versus Recovery

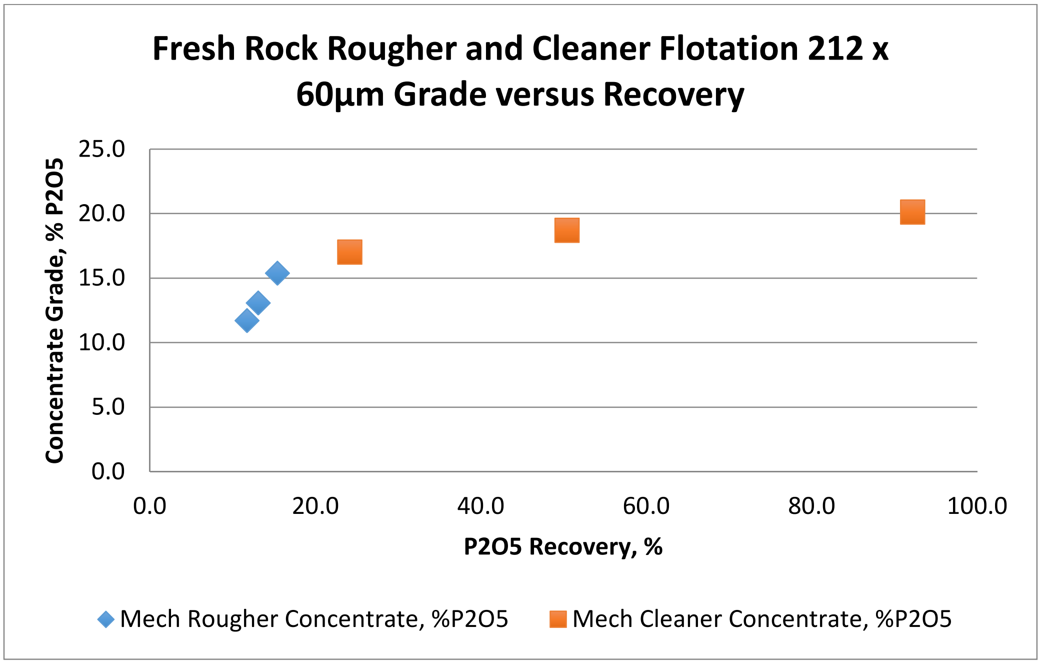
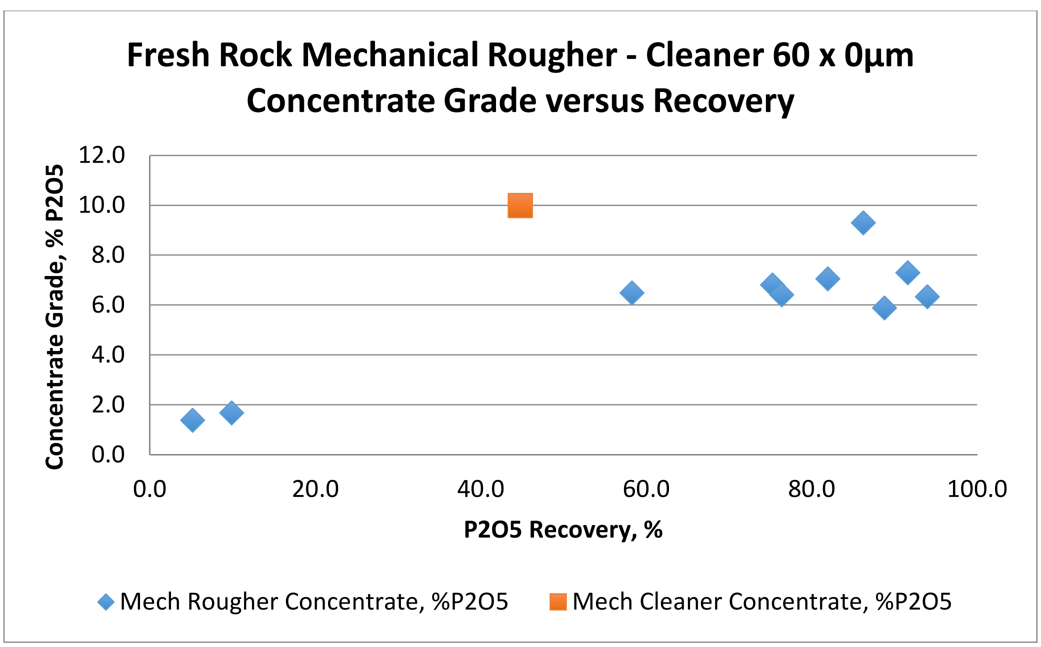


Figure 9-5, Eriez Fresh Rock Mechanical Rougher - Cleaner Flotation 60 x 0µm Concentrate Grade versus Recovery



The results for flotation of the fresh carbonatite samples ground to 212 x 60µm indicated good rougher P_2O_5 recoveries in the 80% range with low concentrate grades in the 10 – 12% range. Rougher flotation followed by one stage of cleaning yielded a concentrate grade of 18.7% P_2O_5 with a recovery of 50.5% P_2O_5 into 31.7% of the mass. For fresh rock sample ground to -60 x 0µm, one of the best rougher concentrate grades was 9.3% P_2O_5 with 86.2% recovery into 48.4% of the feed mass. The same test with a single stage of cleaning resulted in a concentrate grade of 10.0%P2O5 and a recovery of 41% P_2O_5. The recovery rates were dependent on the mass yields in these tests, with little change in concentrate grade.

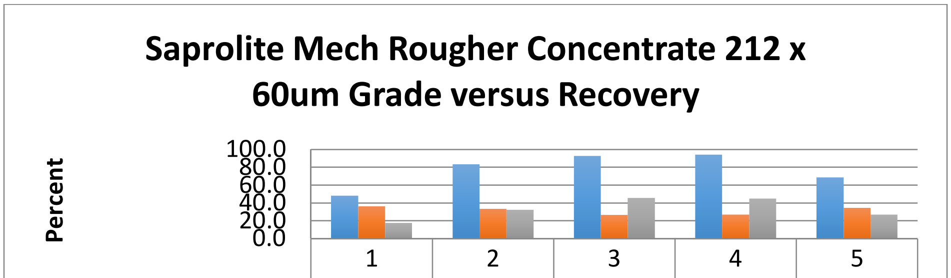
The results of the carbonate flotation tests are presented in Table 9.16. CaO concentrate grades ranged from 28 to 38%, with recoveries ranging from 18 to 33% and MgO concentrate grades ranged from 7.4 to 9%, with recoveries ranging from 34 to 48%. P_2O_5, SiO_2 and Fe_2O_3 rejection to tailings were in the 80 to 95% range. MgO concentrate grades were upgraded compared to the feed, however CaO concentrate grades were very similar to feed grade.

Table 9-16 Results of Carbonate Flotation Tests

Sample	CaO Con Grade	CaO Recovery	MgO Con Grade	MgO Recovery	P_2O_5 Con Grade	P_2O_5 Recovery	Fe_2O_3 Con Grade	Fe_2O_3 Recovery	Con Yield
212x60-11	28.8	32.9	7.4	41.0	0.84	7.18	3.28	14.24	31.56
60X0-9	35.62	18.8	9.0	33.97	1.39	5.14	3.82	13.59	20.49
60x0-10	38.63	32.4	7.67	48.08	1.68	9.87	3.58	19.4	33.54

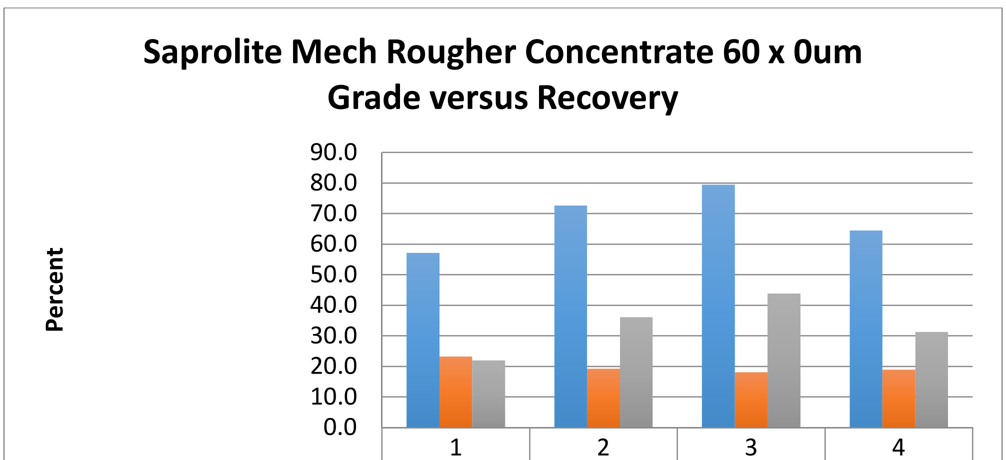
Table 9.17 presents the results from a series of saprolite rougher flotation tests performed on the 212 x 60µm fraction and Table 9.17 shows the results of saprolite flotation tests on the 60 x 0µm fraction. Figures 9.6 and 9.7 are concentrate grade versus recovery curves for the 212 x 60µm and 60 x 0µm fractions respectively. No cleaner tests were performed on the saprolite samples as the concentrate grades and recoveries achieved with rougher flotation were sufficient.

Table 9-17 Eriez Saprolite Mechanical Rougher Flotation 212 x 60µm Concentrate Grade versus Recovery



	1	2	3	4	5
Recovery, %P2O5	48.2	83.3	92.8	94.3	68.6
Concentrate Grade, %P2O5	36.1	33.5	26.4	27.0	34.4
Concentrate Yield, % Feed	17.48	32.09	45.7	44.7	26.71

Table 9-18 Eriez Saprolite Mechanical Rougher Concentrate 60 x 0µm Grade versus Recovery



	1	2	3	4
Recovery, %P2O5	57.1	72.6	79.4	64.4
Concentrate Grade, %P2O5	23.2	19.2	18.1	18.9
Concentrate Yield, % Feed	21.93	36.08	43.81	31.24

Figure 9-6, Eriez Saprolite Mechanical Rougher Concentrate 212 x 60µm Grade versus Recovery

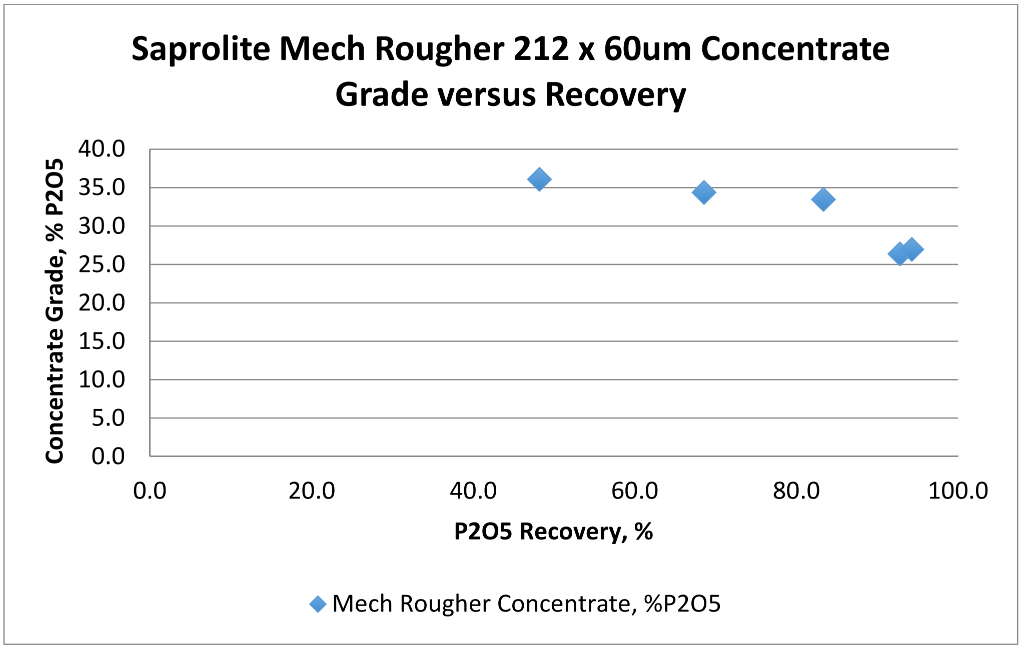
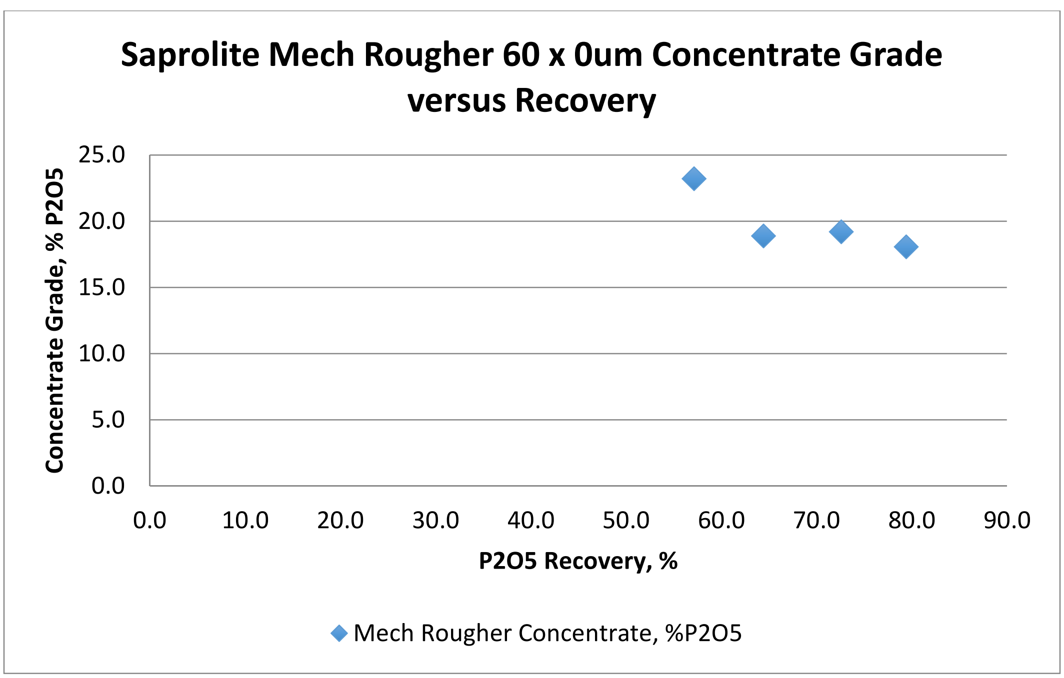


Figure 9-7, Eriez Saprolite Mechanical Rougher Concentrate 212 x 60µm Grade versus Recovery



The best flotation result for the saprolite samples ground to 212um x 60um was a concentrate grade of 33.5% P_2O_5, 83.3% P_2O_5 recovery and a mass recovery of 32.1%. The best result for samples ground to 60um x 0um was a concentrate grade of 19.2% P_2O_5, 72.6% P_2O_5 recovery and a mass recovery of 36.1%.

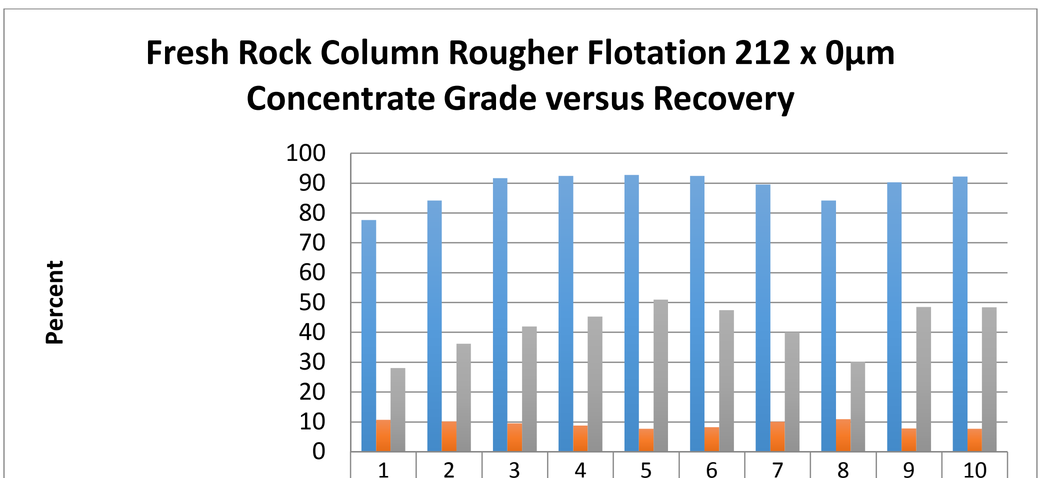
9.4.5 Eriez Column Flotation Test Results

Flotation tests were performed on fresh carbonatite and saprolite samples ground to 212 x 0µm using Eriez' laboratory scale flotation.

The fresh carbonatite tests included rougher, cleaner, second cleaner and scavenger tests to support the development of a column flotation cell based flow sheet. The results of the tests for each flotation stage are presented in Tables 9.19 – 9.21. Figure 9.8 presents the concentrate grade versus recovery results for the rougher, cleaner and second cleaner stages.

A single set of saprolite rougher column flotation tests were performed and are presented in Table 9.22. Figure 9.9 presents the concentrate grade versus recovery curve for the saprolite tests. The grades and recoveries achieved by the rougher columns were within the target ranges, so that concentrate cleaning was not required.

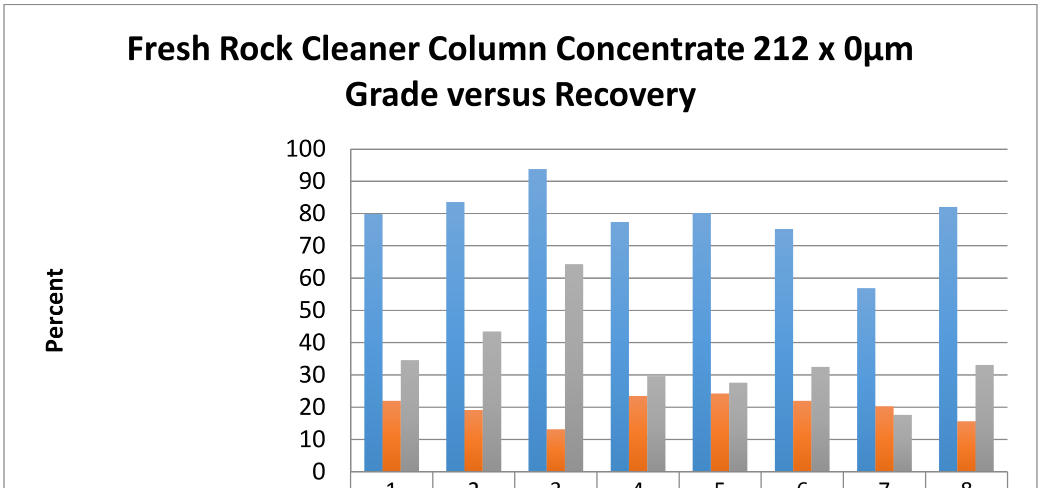
Table 9-19 Fresh Rock Column Rougher Flotation – 212 x 0µm Concentrate Grade versus Recovery



	1	2	3	4	5	6	7	8	9	10
Recovery, %P2O5	77.6	84.19	91.67	92.39	92.79	92.45	89.57	84.19	90.25	92.22
Concentrate Grade, %P2O5	10.66	10.14	9.56	8.79	7.66	8.25	10.01	10.9	7.76	7.66
Concentrate Yield, % Feed	28.1	36.2	42	45.3	51	47.4	40	30.2	48.5	48.4

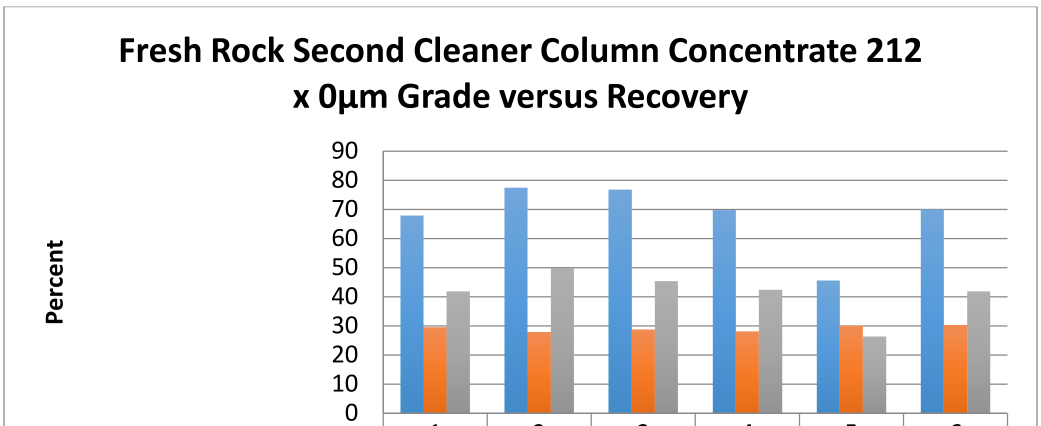
The performance of the rougher column cells was a significant improvement over the mechanical cells with respect to mass yield and recovery. The majority of the test achieved P_2O_5 recoveries in the 90% range, with mass recoveries ranging from 28 – 51%.

Table 9-20 Fresh Rock Cleaner Column Concentrate – 212 x 0µm Grade versus Recovery



	1	2	3	4	5	6	7	8
Recovery, %P2O5	79.93	83.63	93.77	77.47	80.22	75.22	56.89	82.15
Concentrate Grade, %P2O5	21.97	19.09	13.14	23.45	24.24	22.01	20.33	15.66
Concentrate Yield, %P2O5	34.6	43.5	64.3	29.6	27.6	32.5	17.6	33.1

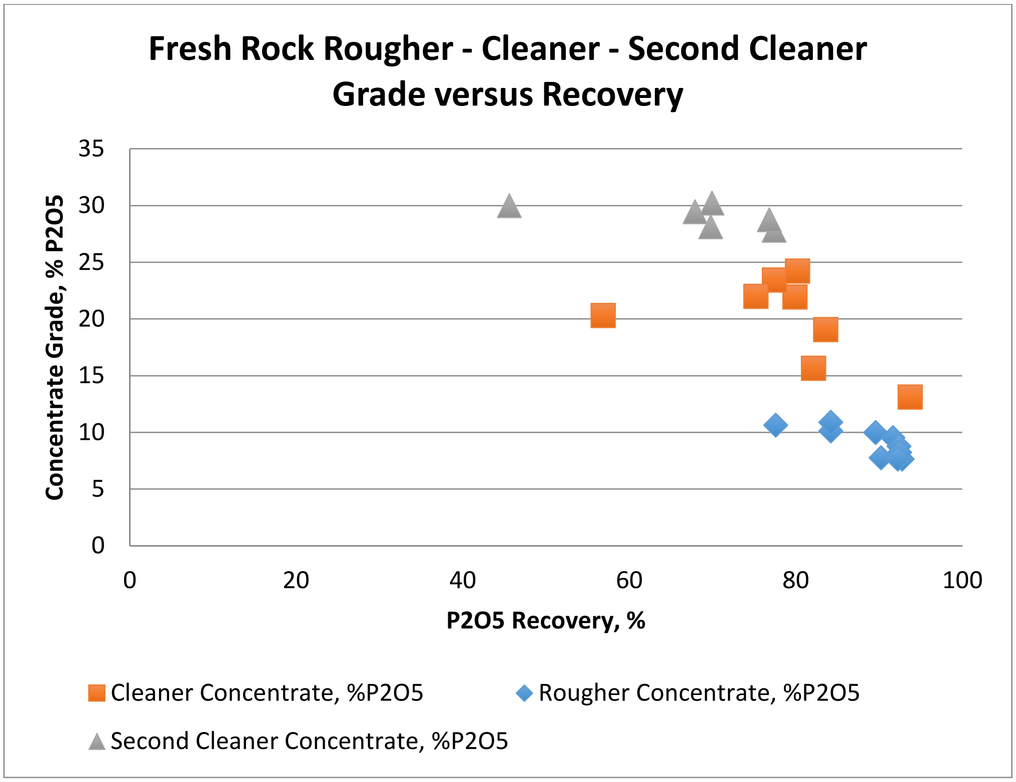
Table 9-21 Fresh Rock Second Cleaner Column Concentrate – 212 x 0µm Grade versus Recovery



	1	2	3	4	5	6
Recovery, %P2O5	67.89	77.4	76.83	69.76	45.57	69.94
Concentrate Grade, %P2O5	29.48	27.85	28.77	28.15	30.03	30.25
Concentrate Yield, % Feed	41.8	49.8	45.4	42.4	26.3	41.8

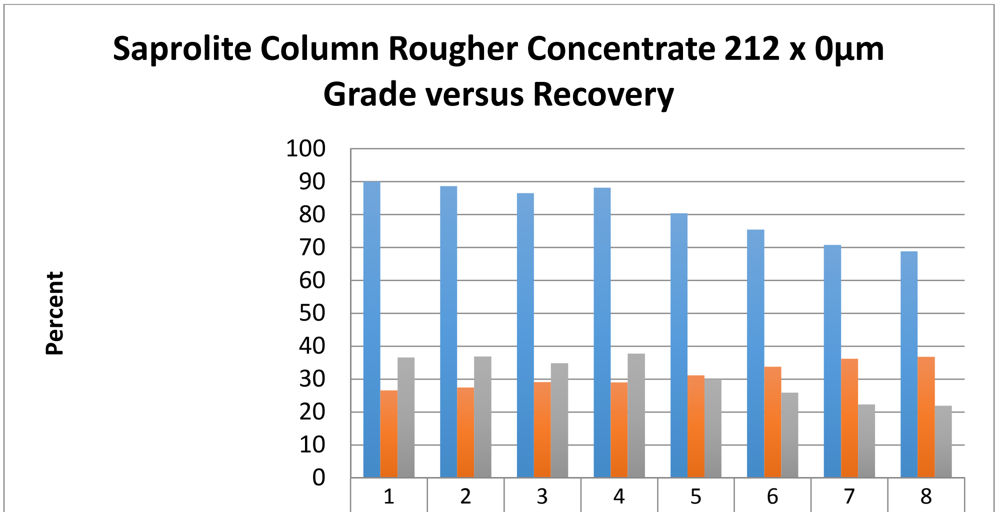
The second stage cleaner column tests yielded concentrate grades ranging from 28 to 30% P_2O_5 and recoveries ranging from 45% to 76.8%.

Figure 9-8, Results of Rougher and Cleaner Column Flotation Tests – Concentrate versus Recovery



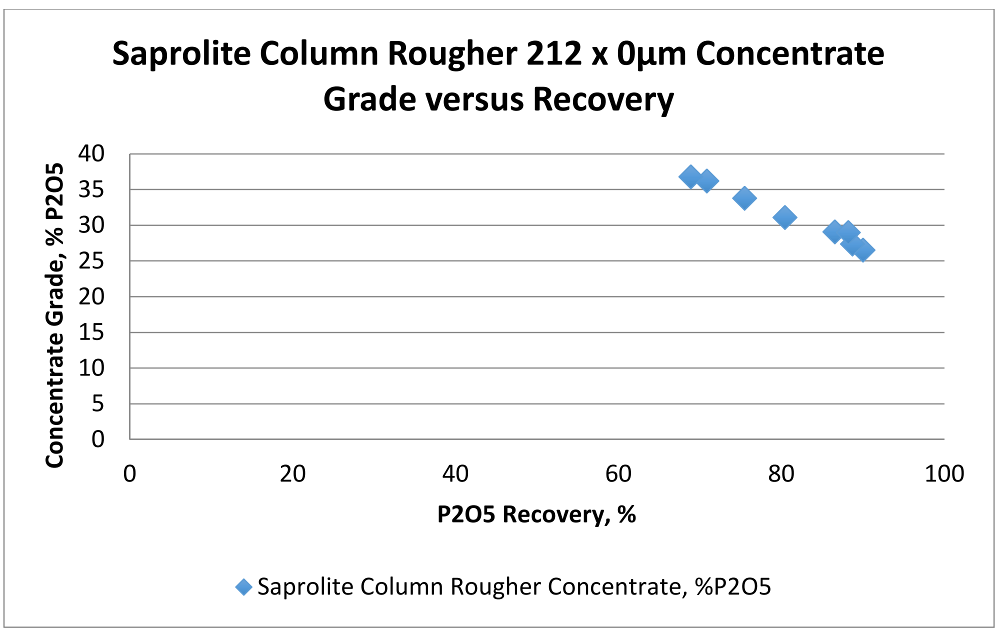
The column flotation cells performed well, providing the rougher recoveries necessary for the cleaning stages to achieve the concentrate grade (30% P_2O_5) and recovery targets (>80%). The best results for the fresh carbonatite samples were achieved using rougher flotation followed by two stages of cleaning. The target concentrate grades were achieved in the second stage of cleaning and there was no need to classify the feed into coarse and slimes fractions.

Table 9-22 Saprolite Rougher Column Concentrate – 212 x 0µm Grade versus Recovery



	1	2	3	4	5	6	7	8
Recovery, %P2O5	89.99	88.69	86.55	88.17	80.43	75.47	70.81	68.88
Concentrate Grade, %P2O5	26.53	27.4	29.1	29	31.1	33.8	36.2	36.8
Concentrate Yield, % Feed	36.6	36.9	34.8	37.7	30	25.9	22.3	21.9

Figure 9-9, Saprolite Rougher Column Concentrate – 212 x 0µm Grade versus Recovery



The results of the saprolite column rougher flotation tests were very positive. The concentrate grades achieved in rougher flotation ranged from 26.5 to 36.8% P_2O_5, with the majority of tests above 29%. The P_2O_5 recoveries ranged from 60 to 90% P_2O_5 with the majority of the tests above 80% P_2O_5.

Table 9.23 presents the results of the column flotation tests selected to support the flow sheet for recovery of P_2O_5 concentrate from the fresh carbonatite samples.

The flow sheet includes rougher flotation followed by two stages of cleaning. The second cleaner tailing is returned to the first cleaner feed. The second cleaner concentrate is final concentrate. The first cleaner tailings flows to a scavenger column cell. The scavenger concentrate returns to the rougher column feed, while the scavenger tailings, joins with the rougher column tailings as final tailings.

Table 9-23 Results of Selected Tests to Apply to the Selected Flowsheet

Stage	Component	Mass		Assays %				Distribution %			
		(g)	%	P2O5	MgO	Fe2O3	CaO	P2O5	MgO	Fe2O3	CaO
Rougher	Concentrate	91.5	47.4%	8.25	7.89	4.63	39.94	92.45	63.17	48.45	46.24
	Tailings	101.5	52.6%	0.61	4.14	4.43	41.85	7.59	7.59	51.44	53.77
	Feed	193.0	100.0%	4.23	5.92	4.53	40.94	100.03	70.76	99.89	100.01
Cleaner	Concentrate	49	43.5%	19.09	7.01	3.36	41.25	83.63	38.26	32.48	46.23
	Tailings	63.6	56.5%	2.88	8.72	5.38	36.94	16.39	16.39	67.55	53.78
	Feed	112.6	100.0%	9.93	7.97	4.5	38.81	100.01	54.65	100.03	100.01
Second Cleaner	Concentrate	48	41.8%	30.25	4.71	2.19	45.39	69.94	27.46	27.08	45.06
	Tailings	66.8	58.2%	9.35	8.93	4.23	39.77	30.10	30.10	72.84	54.97
	Feed	114.8	100.0%	18.08	7.17	3.38	42.11	100.03	57.56	99.92	100.02
Cleaner Scavenger	Concentrate	67	65.3%	4.88	9.19	4.54	39.5	88.48	71.49	59.27	66.07
	Tailings	35.7	34.7%	1.18	6.9	5.86	38.13	11.38	11.38	40.70	33.94
	Feed	102.7	100.0%	3.6	8.39	5	39.02	99.86	82.88	99.97	100.01

Figure 9.10 presents the proposed column flotation flow sheet for the fresh carbonatite.

Figure 9-10, Proposed Flowsheet Using Column Flotation Cells

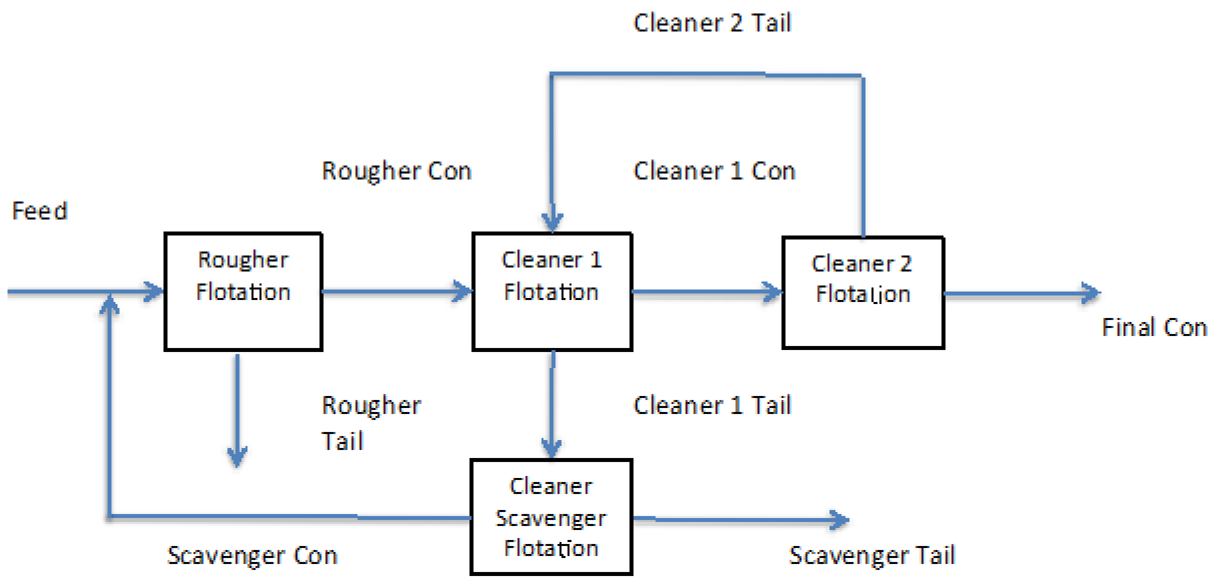


Table 9.24 presents the results of a mass and P_2O_5 balance performed using the data from the selected tests. The balance was performed using a nominal 100 t/h feed rate. The resulting

Table 9-24 Results of Mass Balance Using Proposed Flow Sheet

Criteria	Units	Value
Design Flotation Feed Rate	t/h	100
New Feed + Scavenger Concentrate	t/h	132.5
Flotation Feed Grade	% P_2O_5	4.2
Final Concentrate Grade	% P_2O_5	30.3
Concentrate Production Rate	t/h	11.8
P_2O_5 Recovery	%	84.6
Circulating Load, Mass	%	32.5
Circulating Load, P_2O_5	%	28.4

9.5 Agricultural Limestone Concentrate Production

Aguia are planning to produce an agricultural limestone product (calcite) from the fresh carbonitite flotation tailings. The fresh rock composite contains approximately 40% CaO equivalent to 71.4% $CaCO_3$ and the saprolite composite contains approximately 14% CaO or 25% $CaCO_3$. The carbonatite composite also contains 5.6% MgO and the saprolite sample contains 1.13% MgO. The total calcium carbonate equivalent CCE for the fresh carbonatite is 85.3% $CaCO_3$ and the CCE for the saprolite is 27.8% $CaCO_3$.

The analysis of the flotation tailings from the selected flowsheet is presented in Table 9.24. The concentration of CaO in the feed and tailings remains essentially the same, while the MgO is concentrating along with the P_2O_5 in approximately the same ratio. The CaO and MgO concentrations in the rougher tailings were 41.85% and 4.14% respectively. The CaO and MgO concentrations in the scavenger tailings were 38.13% CaO and 4.14% MgO.

The CaO and MgO concentrations in the combined products assuming the selected flotation flowsheet are 41.17% CaO and 4.65% MgO. The CCE for the combined flotation tailings is 85.05% $CaCO_3$. In order to meet the standards for agricultural lime, the products would need to be upgraded.

9.5.1 Reverse Flotation Tests

A set of reverse flotation tests were previously discussed in which CaO and MgO were floated and phosphate, iron and silica were rejected to tailings. Table 9.25 contains the results of those tests. The flotation tests were preliminary and resulted in the CaO concentration remaining the same as the feed, while the MgO was upgraded. The phosphate, iron and silica were reduced. More work would need to be done on the flotation route and magnetic separation may still be required.

Table 9-25 Results of Carbonate Flotation Tests

Sample	CaO Con Grade	CaO Recovery	MgO Con Grade	MgO Recovery	P_2O_5 Con Grade	P_2O_5 Recovery	Fe_2O_3 Con Grade	Fe_2O_3 Recovery	Con Yield
212x60-11	28.8	32.9	7.4	41.0	0.84	7.18	3.28	14.24	31.56
60X0-9	35.62	18.8	9.0	33.97	1.39	5.14	3.82	13.59	20.49
60x0-10	38.63	32.4	7.67	48.08	1.68	9.87	3.58	19.4	33.54

9.5.2 Magnetic Separation and Flotation Tests

Combinations of magnetic separation and flotation tests were performed by Eriez to investigate the potential of upgrading the CaO concentration and reducing the iron concentration of the fresh rock flotation tailings to produce a by-product agricultural lime product for sale. There are other potential markets, which may also buy the product.

Multiple circuit configurations were investigated and many tests were performed. Three circuits were identified as having the most potential for producing a saleable calcite concentrate.

The first concentrate was produced by subjecting the rougher tailings sample to low intensity magnetic separation, LIMS, followed by direct CaO rougher and cleaner flotation in mechanical flotation cells. The flotation concentrate was then subjected to wet high intensity magnetic separation, WHIMS, at 14,000G to produce a final concentrate containing 49% CaO at a CaO recovery of 68.5%. The mass recovery of the cleaner flotation concentrate was approximately 69% and the final concentrate mass recovery was 61%. Table 9.26 presents the results of the first configuration.

Table 9-26 Magnetic Separation and Flotation Results for the First Calcite Concentrate

1. LIMS, Rougher-Cleaner Flotation on LIMS Non-Mag and WHIMS Separation on Cleaner Concentrate													
Flotation and Magnetic Separation	**Mass (%)**	**CaO (%)**	**MgO (%)**	**Fe2O3 (%)**	**Al2O3 (%)**	**P2O5 (%)**	**SiO2 (%)**	**Sulf (%)**	**TiO2 (%)**	**CaO Grade (%)**	**Mass Yield (%)**	**CaO Recovery (%)**	**MER**
LIMS Mag	5.36	5.90	1.70	79.39	0.35	0.31	2.80	0.18	3.91				
Rougher Flotation Tail	16.05	39.65	6.99	5.49	1.79	0.82	13.86	0.48	1.12				
Rougher Flotation Con	78.59	47.14	3.44	2.16	0.44	0.58	2.51	0.24	0.38				
Cleaner Flotation Tail	9.41	42.48	6.23	4.41	1.62	0.83	12.07	0.48	0.85				
Cleaner Flotation Con	69.18	**47.77**	3.06	1.86	0.27	0.55	1.21	0.20	0.32	**47.8**	**69.2**	**75.6**	0.11
WHIMS 14,000G Mag of Cleaner Con	8.10	38.40	8.16	6.09	0.61	0.35	4.89	0.20	2.29				
WHIMS 14,000G Non-Mag of Cleaner Con	61.08	**49.01**	2.38	1.30	0.23	0.58	0.72	0.20	0.06	**49.0**	**61.1**	**68.5**	0.08
Calculated Feed	100.00	43.73	3.92	6.84	0.65	0.61	4.35	0.27	0.69				0.26

The second calcite concentrate was produced by magnetic separation only. The rougher tailings sample was first treated with LIMS at approximately 1,000G. The non-magnetic fraction from the LIMS separation was then processed in a series of WHIMS tests at increasing field strengths. Non-magnetics from each of the WHIMS stages were subjected to the next higher field strength. The stages were 5,000G, 10,000G, 15,000G and finally 20,000G. The final concentrate grade was 50.3% CaO and the CaO recovery was 71.1%. Table 9.27 presents the results of the second configuration.

Table 9-27 Magnetic Separation and Flotation Results for the Second Calcite Concentrate

2. LIMS and WHIMS Separation on LIMS Non-Mag													
Magnetic and Non-Magnetic	**Mass (%)**	**CaO (%)**	**MgO (%)**	**Fe2O3 (%)**	**Al2O3 (%)**	**P2O5 (%)**	**SiO2 (%)**	**Sulf (%)**	**TiO2 (%)**	**CaO Grade (%)**	**Mass Yield (%)**	**CaO Recovery (%)**	**MER**
LIMS Mag	5.03	5.90	1.70	79.45	0.35	0.31	2.80	0.18	3.92				
WHIMS 5,000G Mag	15.77	29.05	9.75	8.37	1.96	0.89	10.92	0.18	2.76				
Calculated WHIMS 5,000G Non-Mag	79.20	46.70	3.21	1.82	0.56	0.89	3.64	0.16	0.12	46.7	79.2	88.3	0.12
WHIMS 10,000G Mag	11.41	35.10	8.23	3.43	1.38	0.85	8.89	0.15	0.53				
Calculated WHIMS 10,000G Non-Mag	67.79	48.65	2.37	1.55	0.43	0.90	2.76	0.16	0.05	48.7	67.8	78.8	0.09
WHIMS 15,000G Mag	6.28	37.10	8.51	3.26	1.09	0.88	5.10	0.15	0.20				
Calculated WHIMS 15,000G Non-Mag	61.51	49.83	1.74	1.37	0.36	0.90	2.52	0.16	0.03	49.8	61.5	73.2	0.07
WHIMS 20,000G Mag	2.41	37.20	5.89	2.43	0.96	0.90	4.50	0.15	0.18				
WHIMS 20,000G Non-Mag	59.10	**50.35**	1.57	1.33	0.33	0.90	2.44	0.16	0.03	**50.3**	**59.1**	**71.1**	0.06
Calculated Feed	100.00	41.86	4.17	6.76	0.77	0.86	4.75	0.16	0.73				0.28

The third concentrate is recommended by Eriez to be the most favourable of the options. The third concentrate was produced by applying LIMS, MIMS, medium intensity magnetic separation, and then flotation for removal of mica. The rougher tailings samples were first treated using wet drum LIMS. The non-magnetics were then subjected to MIMS using a rare earth, RE, wet drum separator (SP2RE). The non-magnetics from the RE separator were then floated in mechanical flotation cells using an amine collector, Arrmaz CustAmine 1208, to remove the iron and mica. The final concentrate grade following flotation was 48.5% CaO at a CaO recovery of 83.1%. The mass recovery of the final concentrate was 70.1%. Table 9.28 presents the results of the third and recommended configuration.

Table 9-28 Magnetic Separation and Flotation Results for the Third Calcite Concentrate

3. LIMS, RE Drum Separation on LIMS Non-Mag, Mica Float on RE Drum Non-Mag													
Flotation and Magnetic Separation	**Mass (%)**	**CaO (%)**	**MgO (%)**	**Fe2O3 (%)**	**Al2O3 (%)**	**P2O5 (%)**	**SiO2 (%)**	**Sulf (%)**	**TiO2 (%)**	**CaO Grade (%)**	**Mass Yield (%)**	**CaO Recovery (%)**	**MER**
LIMS Mag	5.88	5.90	1.70	79.20	0.35	0.31	2.80	0.18	3.89				
Calculated LIMS Non-Mag	94.12	43.13	4.41	3.34	0.82	0.73	5.09	0.16	0.62	43.1	94.1	99.2	0.20
MIMS Mag	2.87	31.80	6.10	15.99	1.10	1.20	8.60	0.82	7.08				
Calculated MIMS Non-Mag	91.25	43.49	4.35	2.94	0.81	0.72	4.98	0.14	0.42	43.5	91.3	96.9	0.19
Floated Mica Tailings	21.14	26.72	9.01	8.17	2.77	1.97	20.20	0.52	1.49				
Non-Floated Calcite Con	70.11	**48.55**	2.95	1.36	0.22	0.34	0.39	0.03	0.10	**48.5**	**70.1**	**83.1**	0.09
Calculated Feed	100.00	40.94	4.25	7.80	0.79	0.71	4.95	0.17	0.81				0.31

9.5.3 Agricultural Lime Specification

A Brazilian agricultural lime specification was provided by Aguia. The two most important aspects of agricultural lime are the chemical composition and the particle size distribution of the final product. The calcium carbonate equivalent, CCE, or total neutralizing value, TNV compares the chemistry of a particular quarry's limestone with the neutralizing power for pure calcium carbonate, effective neutralizing value (ENV).

- CCE 98.4%
- Minimum CaO 41.5%
- Minimum MgO 9.7%
- Minimum Total Oxides 51.1%
- pH 9.5
- ENV 99.7%

Table 9.29 shows the chemical composition specifications for three grades of calcitic agricultural lime while the size specifications are presented in Table 9.30.

Table 9-29 Range of Calcite Concentration Specifications (from Aguia)

Compound	Calcitic I	Calcitic II	Calcitic III
CaO	47.82	52.46	49.8
SiO_2	6.0	3.76	6.75
Al_2O_3	1.83	1.10	0.71
Fe_2O_3	0.92	0.66	1.47
MgO	2.08	1.23	1.48
K_2O	0.4	0.18	0.10
Na_2O	0.06	0.22	0.12
SO_3	0.37	0.01	1.10
P.F.	40.52	40.38	38.55
Total	**100.0**	**100.0**	**100.0**

Table 9-30 Size Specification for Agricultural Lime

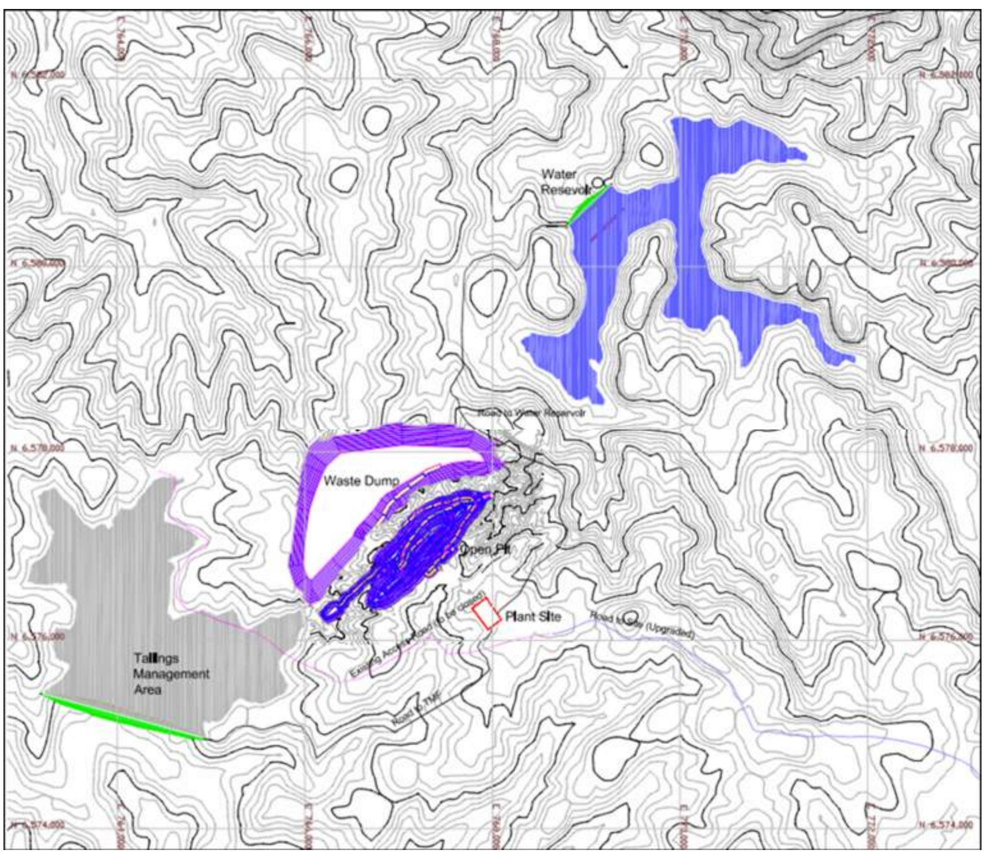
Sieve Size	% Passing
4 mesh (4.75mm)	100
8 mesh (2.36mm)	100
20 mesh (0.841mm)	100
60 mesh (99.3mm)	99.3
100 mesh (0.150mm)	98.3

10 MINING

Mine operations for the Três Estradas and Joca Tavares properties are planned as a conventional open pit, truck and shovel mining methods for the phosphate and waste material. The mining areas chosen and planned were defined primarily by optimized pit shells, the haulage distance to the plant, and proximity to “ex-pit" dumping. Figure 10.1 shows the site plan for the Três Estradas facilities, pit, dump and dams.

Mining production levels are defined by production required to produce a nominal 500 Ktpy of phosphate concentrate. On a steady-state basis, the ROM production rate peaks at 4.5 Mtpy, to maintain the nominal phosphate concentrate production level. This ROM mining rate accounts for a 95% recovery and a 5% dilution of the phosphate material from the pit. ROM quantities were generated using the geologic model described earlier in the report, and formed the basis of the mine schedule (presented below).

Figure 10-1, Três Estradas Site Plan



10.1 General Mining Method

A ‘truck-shovel’ mining approach is a typical and standard method in surface mining, for steeply dipping mineralization. The truck-shovel approach takes advantage of the relative flexibility and “agility” of excavators / shovels, which can be particularly valuable in operations where there are potential complexities in selective mining of narrow to wide mineralized zones and provide the ability to add equipment as needed to meet the waste removal requirements. For this project self-mining is proposed. To reduce capital investment, it is assumed that the mining equipment will be leased.

For Três Estradas, mining of the pit will be in two phases as this will allow a “ramp-up” of the plant and mining. Phase 1 pits will attain a depth of approximately 100m and the Phase 2 pit will attain an ultimate depth of 280m. The height of the waste rock dump will reach approximately 60m. Figure 10.2 shows the conceptual pit and dump design for the ultimate pit. The proposed plant location is relatively close to the pit as to minimize the haulage of the phosphate. The LOM strip ratio is 3.1:1.

Joca Tavares is a much smaller resource, and a small fleet, or contractor, can be used to mine the phosphate and transport it a nominal 85 km to the Três Estradas. Figure 10.3 shows the conceptual pit and dump design. The maximum depth on the pit is 45 meters, and has a strip ratio of 0.4 to 1.

Using this approach results in a gradual increase of the strip ratio profile until year 7, and then to decreases to Year 14 (see Table 10.1). Given the geologically steeply dipping nature of the deposit, a waste production schedule with a ‘rising’ (low-to-high) strip ratio profile was used.

Figure 10-2, Três Estradas Pit and Dump

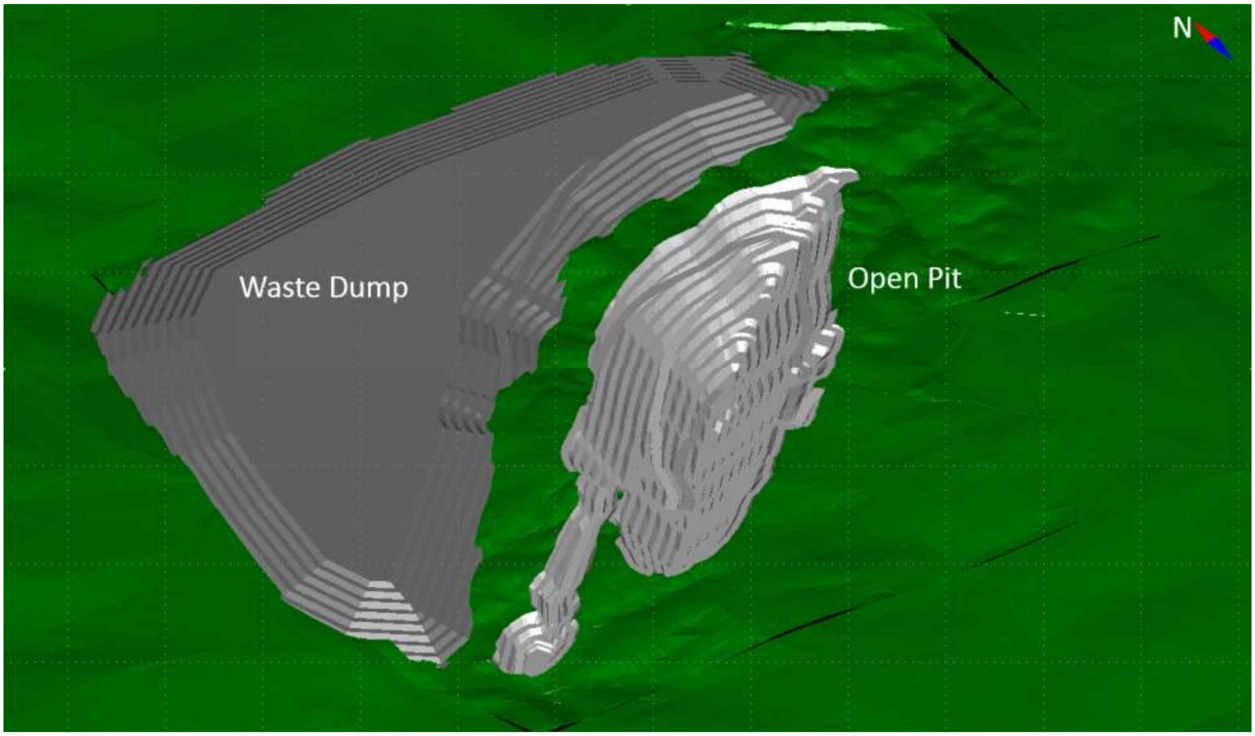
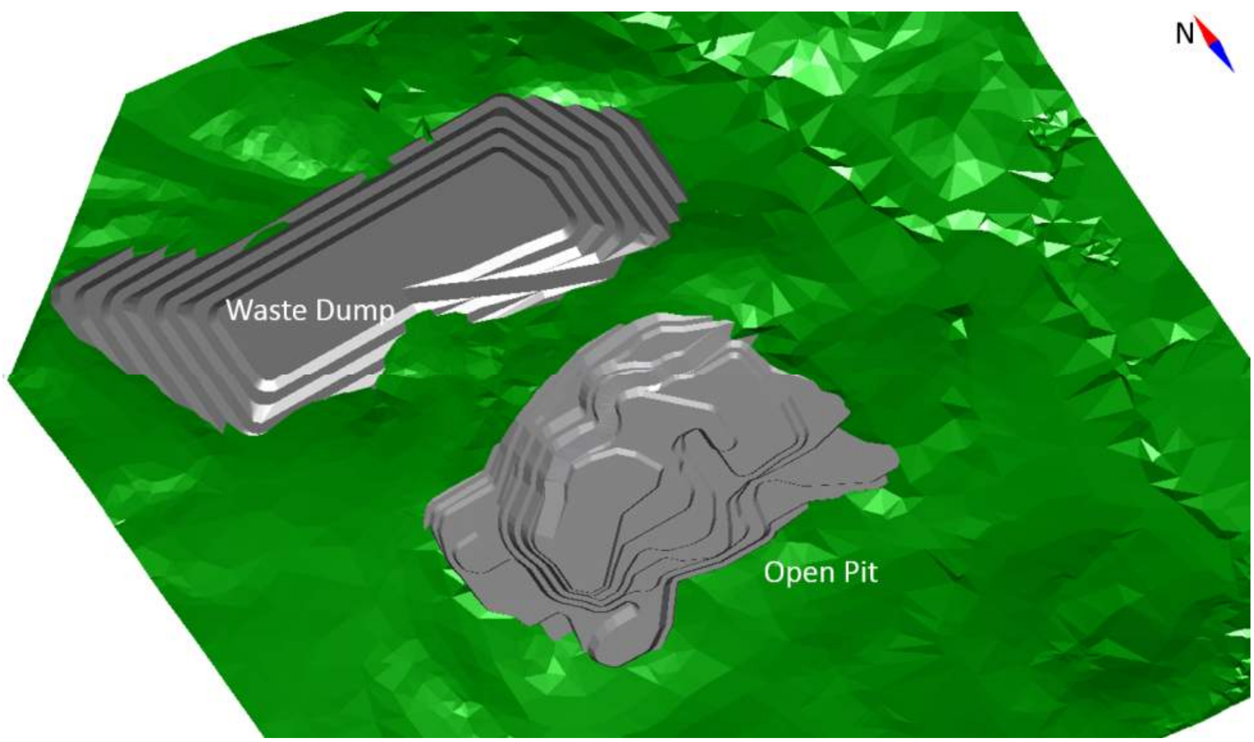


Figure 10-3, Joca Tavares Pit and Dump



10.2 Area Preparation

Prior to excavating the waste and phosphate, topsoil will be removed. This material will be salvaged and hauled to temporary storage piles. As mining advances and reclamation is completed, the topsoil will transported back onto reclaimed lands where it will be revegetated.

10.3 Mining Operations

For this study, a mine life of 14 years was assumed. As previously discussed, the annual ROM mining rate is approximately 4.5 Mtpy. Pre-production mining will commence six months prior to the commissioning of the plant. The first two years of mining occurs at a lower production rate as the mining will focus on the saprolite. The saprolite has a much higher grade than the fresh rock. A mining recovery of 95%, and a dilution of 5% is applied to account for mining losses and the dilution gains from blasting and mining.

Once topsoil has been removed, saprolite waste and phosphate will be mined without blasting. However, it is anticipated that dozers will be required to assist the loading equipment. Waste material and the phosphate will be drilled and blasted. Waste and phosphate material will be excavated with hydraulic shovels and a front end loader (FEL) and loaded into end-dump mining trucks.

Waste material at Três Estradas will be hauled and placed in an adjacent external waste dump which is planned to be located just north of the pit as shown on Figure 10.2. Waste material at Joca Tavares will be hauled and placed in an adjacent external waste dump which is located just north of the pit as shown on Figure 10.3.

10.4 Mining Parameters

Mining at Três Estradas will utilize conventional truck and shovel mining techniques, with a combination of FEL's, hydraulic shovels, hydraulic excavators and end-dump mining trucks. The pit is planned at 10 meter benches, and a 10% ramp. The fresh rock, phosphate and waste will be blasted while saprolite can be excavated with dozer assist. Stable pit wall slopes, adequate safety bench widths and stable dump slopes will be utilized at this operation.

Joca Tavares mining will utilize a smaller truck and shovel mining techniques, with over-the-road trucks to transport the phosphate to Três Estradas. The Joca Tavares pit is planned for 5m benches, and a 10% ramp. As with the Três Estradas pit, stable pit wall slopes, adequate safety bench widths and stable dump slopes will be utilized at this operation.

10.5 MINING SCHEDULE

The ROM mine schedule is presented below as Table 10.1. Full production for the plant feed occurs in Year 3, as the higher grade material early on will limit the plant capacity to produce phosphate concentrate. Joca Tavares is mined from Year 5 through 8.

Table 10.1 Mine Schedule

		Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Total
Plant Feed	**Tonnes**	501	2,001	3,001	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,137	**59,138**
	P205 (%)	10.35%	9.63%	6.71%	4.28%	3.78%	3.87%	3.75%	3.61%	3.68%	3.54%	3.50%	3.56%	3.62%	3.50%	3.50%	**4.10%**
	P2O5 (t)	52	193	201	193	170	174	169	163	165	159	157	160	163	158	145	**2,422**
	CaCO3 (%)	25.1%	30.1%	45.5%	55.2%	53.5%	57.1%	58.5%	56.5%	57.9%	57.8%	56.6%	57.8%	59.3%	59.2%	58.0%	**55.5%**
	CaCO3 (t)	126	601	1,365	2,483	2,406	2,569	2,633	2,544	2,605	2,603	2,546	2,601	2,670	2,662	2,398	**32,812**
Mined Saprolite	**Tonnes**	501	1,814	1,358	465	40	313	102	4	0	0	0	0	0	0	0	**4,596**
	P205 (%)	10.35%	10.03%	9.23%	6.74%	8.27%	6.77%	8.20%	6.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**9.22%**
	P2O5 (t)	52	182	125	31	3	21	8	0	0	0	0	0	0	0	0	**424**
	CaCO3 (%)	14.04%	15.28%	15.58%	14.48%	14.88%	14.78%	14.08%	7.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**15.08%**
	CaCO3 (t)	126	496	379	121	11	83	26	1	0	0	0	0	0	0	0	**1,241**
Mined Fresh	**Tonnes**	0	187	1,643	4,035	4,460	4,187	4,398	4,496	4,500	4,500	4,500	4,500	4,500	4,500	4,137	**54,542**
	P205 (%)	0.00%	5.71%	4.62%	4.00%	3.74%	3.65%	3.65%	3.61%	3.68%	3.54%	3.50%	3.56%	3.62%	3.50%	3.50%	**3.66%**
	P2O5 (t)	0	11	76	161	167	153	160	162	165	159	157	160	163	158	145	**1,998**
	CaCO3 (%)	0.00%	31.51%	33.55%	32.70%	30.00%	33.17%	33.12%	31.61%	32.35%	32.31%	31.61%	32.29%	33.15%	33.05%	32.38%	**32.34%**
	CaCO3 (t)	0	106	986	2,362	2,395	2,486	2,607	2,544	2,605	2,603	2,546	2,601	2,670	2,662	2,398	**31,571**
Waste	**tonnes**	722	2,805	6,775	13,909	16,743	19,126	22,110	22,700	16,991	15,089	14,216	11,897	10,891	8,857	3,067	**185,897**
Rehandled Waste	**tonnes**	22	84	203	417	502	574	663	681	510	453	426	357	327	266	92	**5,577**
Total	**tonnes**	1,222	4,806	9,775	18,409	21,244	23,626	26,610	27,199	21,491	19,589	18,716	16,397	15,391	13,357	7,204	**245,035**
Strip Ratio		1.4	1.4	2.3	3.1	3.7	4.3	4.9	5.0	3.8	3.4	3.2	2.6	2.4	2.0	0.7	**3.1**
Joca Tavares (Included In Above)																	
Phosphate Rock Mined	**Tonnes**	0	0	0	0	0	563	814	761	374	0	0	0	0	0	0	**2,512**
	P205 (%)	0.00%	0.00%	0.00%	0.00%	0.00%	3.95%	4.07%	3.53%	3.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**3.80%**
	P2O5 (t)	0	0	0	0	0	22	33	27	13	0	0	0	0	0	0	**95**
Waste	**tonnes**	0	0	0	0	0	133	322	374	78	0	0	0	0	0	0	**907**

10.6 Mining Equipment

For Três Estradas multiple types of mining equipment are needed to remove the required amount of topsoil, waste material and phosphate rock. Millcreek proposes a 'truck-shovel' mining method fleet of equipment that relies on mid-sized trucks to be matched with appropriately-sized mining shovels and front end loader.

Equipment productivities have been developed based on first principles, industry standard assumptions and haulage route simulations. Table 10.2 summarizes the type, size and maximum fleet quantity of equipment required to execute the mine plan. Fleet sizes for most equipment, vary slightly throughout the mine life.

Table 10-2 Mining Equipment

Type	Size	Quantity
Primary Equipment		
Hydraulic Shovel	$16m^3$	2
Front End Loader	$13m^3$	1
End Dump Truck	91t	15
Support Equipment		
Water Truck	75,000 liters	1
Grader	221kW	2
Track Dozer	433kW	3
Large Blast Hole Drill	10.2	5
Small Blast Hole Drill		1

In addition to the equipment listed above, several other pieces of smaller support equipment will be required such as pumps, light plants, lube and fuel trucks, crew transport vans, pick-up trucks, maintenance trucks, etc. The number of pieces of support equipment has been estimated based on applying factors to primary equipment.

Mining at Joca Tavares will require a much smaller fleet, as mining of the 2.5Mt of phosphate and 900kt of waste material will take place over 4 years. This is planned as small track hoe and over the road trucks to transport the phosphate.

10.7 Geotechnical Considerations

The Três Estrada property is in the initial stages of development and study, a detailed geotechnical investigation has not been completed to date. Preliminary open pit geotechnical analysis was completed by WALM Engenharia Tecnologia Ambiental Ltda.

This has guided assumptions concerning pit slope design, and the availability of suitable material from which to construct the tailings dam.

Millcreek has utilized pit slope design parameters utilized in the previous study, which consist of:

- 35° in the upper strata (saprolite)
- 50° in Fresh Rock

Waste dump design parameters are as follows;

- Individual waste bench slopes assumed at 36 degrees (angle of repose).
- Waste dumps will be constructed in 20 meter lifts and make use of wide safety benches between each lift to create an overall slope of 3:1 (for reclamation).
- Current dump designs have been shown to adequately contain the scheduled ex-pit and backfill waste production.

For the Joca Tavares property, Millcreek assumed a 45° slope for the open pit and the waste dump parameters are the same as Três Estrada.

10.8 Hydrological Considerations

At this stage of study, Millcreek understands there is no detailed hydrologic assessment available. Water management requirements have been estimated based on requirements for similar surface mining projects.

10.9 Water Management

At this time, no detailed plans have been developed regarding water management. Cost estimates for surface and groundwater management are extrapolated from similar surface mining operations. It is assumed that a network of properly designed water diversions, channels, ponds and sumps will be established at the mine site which will divert the water away from active mining areas and pits.

Surface water that does come in contact with the active mining area will be managed with a series of adequately sized channels, sumps and settlement ponds. The captured water will serve the needs of the mine by providing a source for mine haul road watering, equipment wash water, etc. Excess water will likely be pumped to settlement ponds where it will be given time for suspended solids to settle out and ultimately discharged according to local environmental guidelines and standards.

At both Joca Tavares and Três Estradas the pit areas are located in local topographic high points. From this is it expected that the surface water run-off volume would likely be relatively low and simple to manage.

10.10 WORKFORCE

The production requirements discussed above require a 7 day per week schedule operating 365 days per year. The manpower estimate assumes four crews of hourly staff will work a revolving schedule of three-eight hour shifts per day. Table 10.3 presents the hourly manpower requirements at full production levels.

Table 10-3 Hourly Manpower Summary - Full Production

Category	Numbers of Crews	Employees per Crew	Subtotal
Mine Operation			
Drill	4	5	20
Blast	1	6	6
Load	4	3	12
Haul	4	15	60
Support	4	5	20
Auxiliary	4	3	12
Total Mine Operation	**4**	**37**	**130**
Mine Maintenance			
Mechanics	4	7	28
Welders	4	1 to 2	6
Electricians	4	1	4
Fuel / Lube Tire / Labor	4	9 to 10	38
Total Mine Maintenance	**4**	**19**	**79**

10.11 RECLAMATION

As mining progresses, waste dumps will become available for final reclamation. As this occurs, growth media will be placed directly onto reclaimed surfaces and the land revegetated. All regrading that must occur on the waste dumps prior to growth media placement will occur in tandem with waste dumping activities. This effort will ensure that reclamation practices remain concurrent with active mining operations, and will reduce material re-handling expenses. At the conclusion of mining, the final pit void that is remaining will be bermed-off to prevent access.

11 MINERALS PROCESSING

The mineral processing facilities for the Aguia project are designed to treat fresh carbonatite and saprolite rock types from the Tres Estradas mineral deposit. The primary product will be phosphate concentrate, which will be sold for fertilizer manufacture. A secondary or by-product will be a calcitic concentrate, which may be sold as agricultural lime, or a lime product for use in cement manufacture or flue gas desulphurization.

The process design is based on the metallurgical testing programs presented in this report. The most favourable results for phosphate recovery and concentrate production utilized column flotation technology to treat whole material, without removal of the fine, minus 20μm, or "slimes" fraction. The fine fraction is typically removed as it has an adverse effect on the conventional flotation process. The volume of the fine fraction is very significant and the phosphate grade of the fines is similar to the coarse fraction. The potential losses to the fines range from 20 to 45% in the saprolite and 40 to 50% in the fresh carbonatite.

The carbonatite mineralization contains approximately 40% CaO or approximately 71.4% $CaCO_3$, which remains in the phosphate flotation tailings. It is therefore economic to upgrade the tailings to produce a lime product. The upgrading is achieved using a combination of magnetic separation and flotation.

The unit operations included in this process are:

- Primary crushing using an MMD sizer
- Crushed material stockpile and reclaim system
- Washing prior to milling using a log washer
- Single stage SAG mill grinding
- Cyclone classification
- Column flotation, including rougher, cleaner, second cleaner and cleaner scavenger column flotation cells.
- Concentrate handling including thickening, filtration, drying, storage and shipping

- Calcite concentrate production from the phosphate tailings using magnetic separation, including LIMS and MIMS, to upgrade the tailings with respect to CaO and MgO and reduce the Fe_2O_3

- Flotation cleaning of the calcite concentrate, to remove iron and mica

- Calcite concentrate handling, including dewatering, drying, stockpiling and shipping.

11.1 PROCESS DESIGN CRITERIA

KEMWorks was contracted by Aguia to analyze the metallurgical test data and to complete a scoping study in order to develop a preliminary capital cost estimate for the phosphate beneficiation plant, the single super phosphate, SSP, plant and all associated infrastructure. Table 11.1 presents the analyses used by KEMWorks for the scoping study process design. The values selected are from the SGS study and are similar to those determined in the earlier EPUSP and HDA studies.

Table 11-1KEMWorks Analysis Used for Process Design

Analysis %	Fresh Carbonatite	Oxidized Carbonatite
P_2O_5	4.38	11.3
CaO	39.9	14.2
Al_2O_3	1.10	6.85
Fe_2O_3	8.29	20.1
MgO	5.59	1.13
SiO_2	6.80	14.2
TiO_2	0.83	2.8

The design of the phosphate processing facilities at the Aguia Três Estradas mine are based on the metallurgical testing programs presented in Section 11. The production rate will be determined by the economics of the operation and for the purpose of this study, is 570t/h. The design criteria for the project are presented in Table 11.2.

Table 11-2 Process Design Criteria

Item	Units	Value	Source
Plant Capacity Fresh Carbonatite	t/y	4,500,000	Aguia
Plant Capacity Saprolite	t/y	1,250,000	Aguia
Operating Availability	%	90	Aguia
Operating Availability	d/y	328.5	Calculated
Plant Capacity	h/y	7,863	Calculated
Plant Capacity	t/h	570	Calculated
Plant Feed Grade, % P_2O_5	%	4.23	Eriez Testwork
Plant Feed Grade, % CaO	%	40.94	Eriez Testwork
Plant Feed Grade, % MgO	%	5.92	Eriez Testwork
Plant Feed Grade, %Fe_2O_3	%	4.53	Eriez Testwork
Concentrate Yield	%	11.8	Eriez Testwork
Concentrate Production Rate	t/h	43.0	Eriez Testwork
Concentrate Grade, % P_2O_5	%	30.3	Eriez Testwork
Concentrate Recovery, % P_2O_5	%	84.6	Eriez Testwork
Concentrate Particle Size	P95	74	Eriez Testwork
Calcite Feed Grade, % CaO	%	39.8	Eriez Testwork
Calcite Feed Rate	%	88.2	Calculated
Calcite Feed Rate	t/h	321.1	Calculated
Calcite Concentrate Yield	%	70.1	Eriez Testwork
Calcite Concentrate Yield	t/h	225.1	Eriez Testwork
Calcite Concentrate Grade, %CaO	%	48.5	Eriez Testwork
Calcite Concentrate Grade, %MgO	%	2.95	Eriez Testwork
Calcite Concentrate Recovery % CaO	%	83.1	Eriez Testwork
Overall Recovery, % CaO	%	73.3	Calculated

11.2 PROCESS DESCRIPTION

11.2.1 Primary Crushing and Coarse Material Stockpile

Phosphate ore is transported from the mine to the concentrator using haul trucks and direct dumped into the primary crusher feed bin. The material is drawn from the feed bin using and apron feeder. The material transfers from the apron feeder to a single deck, vibrating grizzly with 150mm openings. The grizzly undersized material falls to the crusher discharge conveyor while the grizzly oversize material flows by gravity into the primary MMD-500 roll crusher where the material is crushed to -150mm. The combined grizzly undersize and crushed material is conveyed to the crushed material stockpile by the coarse material stockpile feed conveyor.

The coarse material stockpile is covered and has a live capacity of 8 hours or approximately 5,000 tonnes.

11.2.2 Feed Preparation

Ore is drawn from the stockpile through discharge chutes equipped with apron feeders installed beneath the stockpile. The feeders deliver the phosphate to the SAG mill feed conveyor, which is installed in a tunnel beneath the stockpile. The SAG mill feed conveyor transports the ore to a SAG mill feed screen for the breakup of and removal of organics and clay materials prior to milling. The screen oversize material flows into the SAG mill feed chute, while screen undersize material drops directly into the cyclone feed pumpbox

11.2.3 SAG Mill Grinding and Classification

The phosphate is fed to an 8.5m diameter by 5.0m long SAG mill and ground to a target of 80% passing 212µm. The mill discharges onto a trommel screen with 6mm openings. The trommel undersize flows into the primary cyclone feed pump box. The trommel oversize material is fed onto a set of three pebble conveyors in series, which return the pebble oversize material to the SAG mill feed chute for regrinding. Slurry at approximately 50% solids is pumped from the cyclone feed pump box to a cluster of 6 – 800mm diameter cyclones designed for classification. The target size distribution is 80% passing 212µm. The cyclone underflow returns to the SAG mill feed chute and the cyclone overflow advances to a single flotation circuit feed conditioner.

11.2.4 Flotation

The conditioner provides mixing and retention time for the addition of flotation reagents and pH modifiers to the slurry required for flotation. The primary phosphate collector for the fresh carbonatite material is Akzo Nobel MD20544 and the collector for the oxide material is Akzo Nobel MD20389. The pH is maintained at approximately 10.5 with NaOH and caustic corn starch is added as a carbonate depressant for both material types.

The flotation circuit consists of a rougher stage followed by two stages of cleaning for concentrate production. In addition, a cleaner scavenger stage treats the first cleaner underflow and returns the concentrate to the rougher stage. Each stage consists of a cluster of column cells operating in parallel with feed provided by a multi-outlet, equal volume distributor.

11.2.5 Rougher Stage Flotation

Rougher flotation consists of two clusters of 5, 5.0m diameter by 10.0m high column flotation cells operating in parallel for a total of 10 cells. Feed distribution is provided by two, 5-way distributors. The concentrate from the rougher column cells is pumped to a set of 4, 5.0m diameter by 10.0m high, first stage cleaner flotation columns. Feed distribution is provided by a 4-way distributor. The underflow from the rougher columns will report to the calcite process pump box.

11.2.6 First Stage Cleaner Flotation

The concentrate from the first stage cleaner column cells is pumped to the feed of a set of 2, 5.0m diameter by 10.0m high second stage cleaner column cells with a 2-way feed distributor. The tailings from the first stage cleaner column cells is pumped to a set of 6, 5.0m diameter by 10.0m high cleaner scavenger column flotation cells with a 6-way feed distributor.

11.2.7 Cleaner Scavenger Flotation

The concentrate from the scavenger cells is pumped back to the feed of the rougher cells. The scavenger underflow slurry flows to the calcite processing feed pump box.

11.2.8 Second Stage Cleaner Flotation

The underflow from the second cleaner column cells returns to the feed of the first stage cleaner column cells. The concentrate from second cleaner columns is the final concentrate and reports to the concentrate thickener.

11.2.9 Apatite Concentrate Dewatering, Drying and Handling

Concentrate is pumped from the concentrate thickener to a 1.5m wide by 32m long belt, filter for dewatering to approximately 15% moisture. The water recovered from the concentrate is pumped to the process water tank for reuse. The belt filter discharges onto a conveyor feeding a 2.8m diameter by 21m long rotary concentrate dryer. The dryer air is heated in a diesel-fired combustion chamber external to the dryer. The dryer is equipped with a baghouse to recover fines lost in the drying process. Exhaust gases passing through the baghouse are vented through a stack to atmosphere. The fines collected in the baghouse are discharged onto the dryer discharge conveyor along with the dried concentrate, and then onto a series of conveyors to transport the concentrate to the concentrate storage stockpile. Product is distributed onto the storage stockpile by an overhead tripper conveyor system and later reclaimed by a stockpile reclaimer feeding the stockpile area discharge conveyor system. The product will be conveyed to a truck loading system for local distribution.

11.2.10 Calcite Magnetic Separation and Flotation

The tailings from the apatite flotation circuit will be processed to generate an agricultural lime product. The target will be to upgrade the CaO and MgO contents and to minimize or eliminate the phosphate, iron and silica, in the forms of apatite, magnetite and mica.

The apatite tailings slurry will be pumped to the calcite circuit feed thickener to control the feed density to magnetic separation. The slurry will first be passed through low intensity wet drum magnetic separators (LIMS) operating at approximately 1000G to, remove the ferromagnetic components. The non-magnetic fraction, calcite concentrate, will be upgraded using medium intensity (MIMS) rare earth, RE, wet drum separators at approximately 6000G to produce an upgraded calcite concentrate.

Following magnetic separation, the non-magnetic calcite concentrate will be pumped to the biotite flotation circuit feed thickener. The slurry will be conditioned with an amine collector, Arrmaz CustAmine 1208 and floated to remove biotite and iron. The concentrate from the biotite flotation circuit will report to the final tailings. The tailings from the biotite flotation circuit will be the final calcite concentrate, or agricultural lime product.

11.2.11 Calcite Dewatering, Drying and Handling

The calcite concentrate is pumped from the concentrate thickener to a 1.5m wide by 32m long belt, filter for dewatering to approximately 15% moisture. The water recovered from the concentrate is pumped to the process water tank for reuse. The belt filter discharges onto a conveyor feeding a 2.8m diameter by 21m long rotary concentrate dryer. The dryer air is heated in a diesel-fired combustion chamber external to the dryer. The dryer is equipped with a baghouse to recover fines lost in the drying process. Exhaust gases passing through the baghouse are vented through a stack to atmosphere. The fines collected in the baghouse are discharged onto the dryer discharge conveyor along with the dried concentrate, and then onto a series of conveyors to transport the concentrate to the concentrate storage stockpile. Product is distributed onto the storage stockpile by an overhead tripper conveyor system and later reclaimed by a stockpile reclaimer feeding the stockpile area discharge conveyor system. The product will be conveyed to a truck loading system for local distribution.

11.3 Process Water Storage and Distribution

The process water tank receives water from the concentrate thickener overflow, the belt filter filtrate, tailings reclaim water, and fresh water make-up water. The process water pumps distribute water throughout the plant according to process requirements.

11.4 Reagent Storage and Handling

The reagent storage and mixing area provides for receipt of chemicals in bulk bags, drums and tanker trucks, and mixing and distribution of reagents to the process plant.

The reagents are required primarily for flotation and thickening and include:

- MD20544 – phosphate collector for fresh carbonatite – delivered by tanker truck
- MD20389 – phosphate collector for oxidized carbonatite, saprolite – delivered by tanker truck
- Cornstarch – depressant for carbonates – delivered in bulk bags – requires mixing with water and caustic, NaOH prior to distribution.
- Caustic, NaOH, 50% solution – distributed for pH modification and mixed with cornstarch for use as a flotation reagent.
- Arrmaz CustAmine 1208 – cationic collector for mica flotation from the calcite concentrate – delivered in bulk bags

11.5 Flow Sheet

Figures 11.1 through11.5 illustrate the process flowsheets for the phosphate and calcite beneficiations.

Figure 11-1, Flow Sheet – Crushing and Grinding

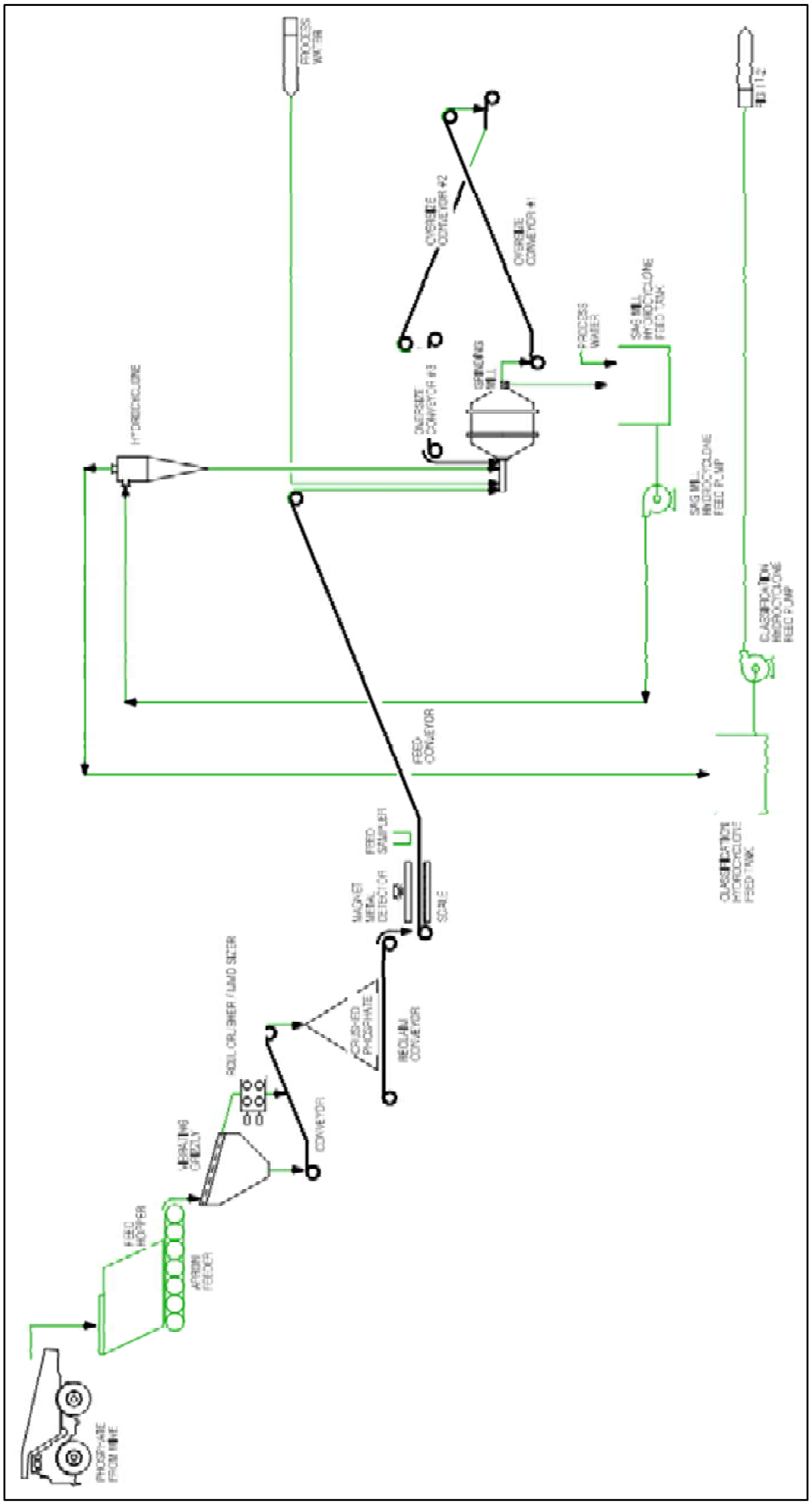


Figure 11-2, Flow Sheet – Phosphate Flotation and Concentration

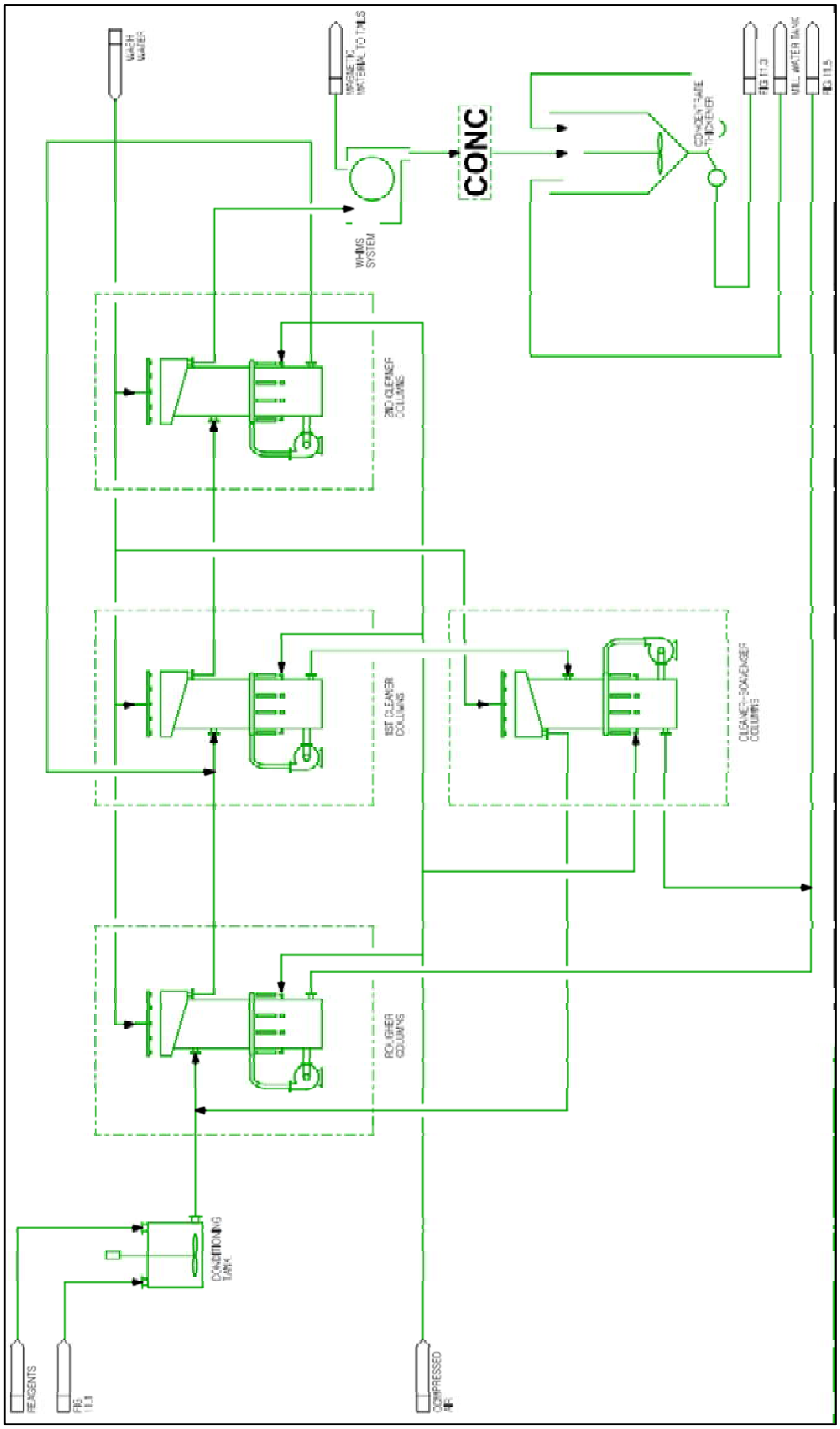


Figure 11-3, Flow Sheet – Phosphate Drying

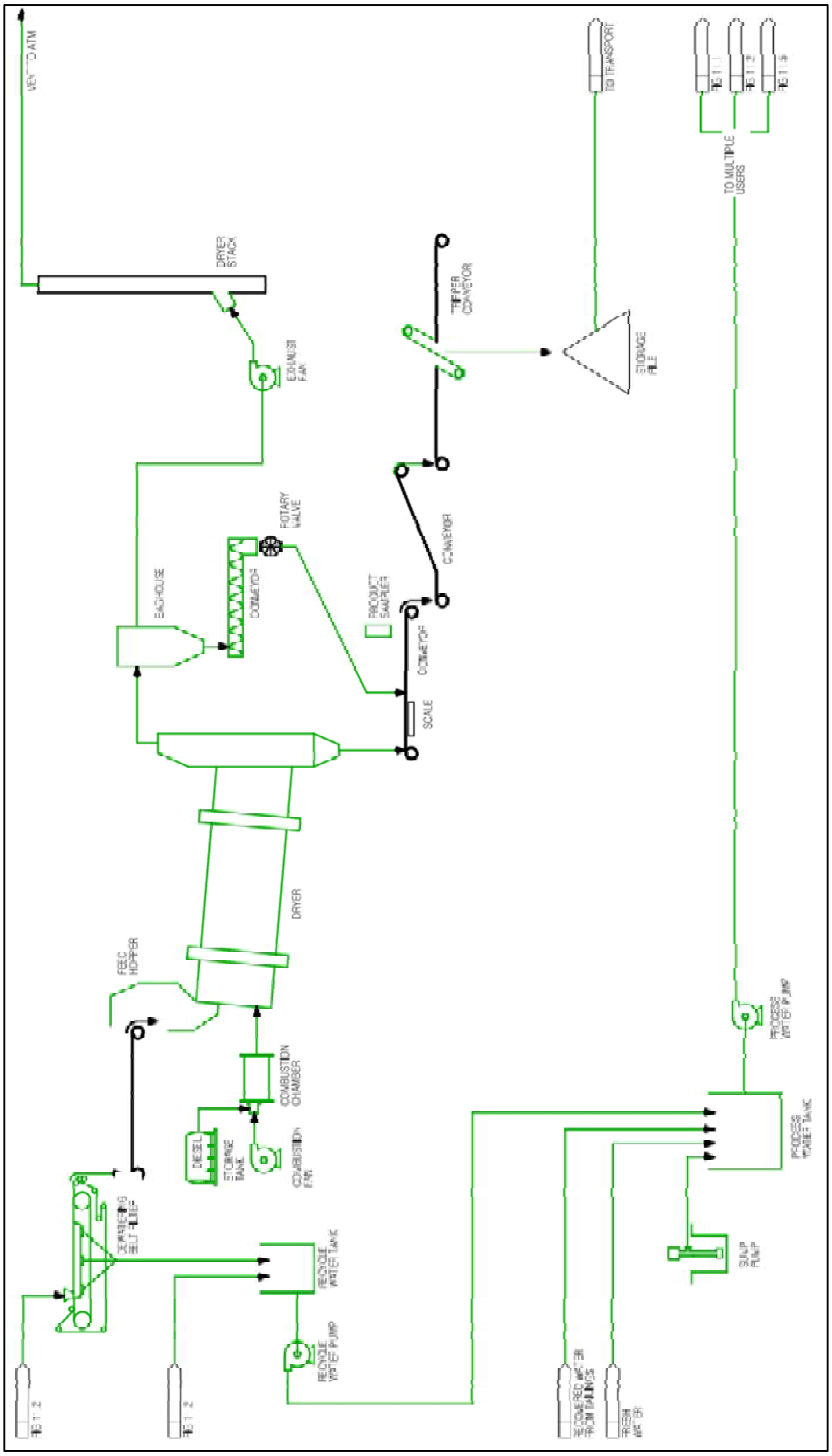


Figure 11-4, Flow Sheet Chemical Storage and Distribution

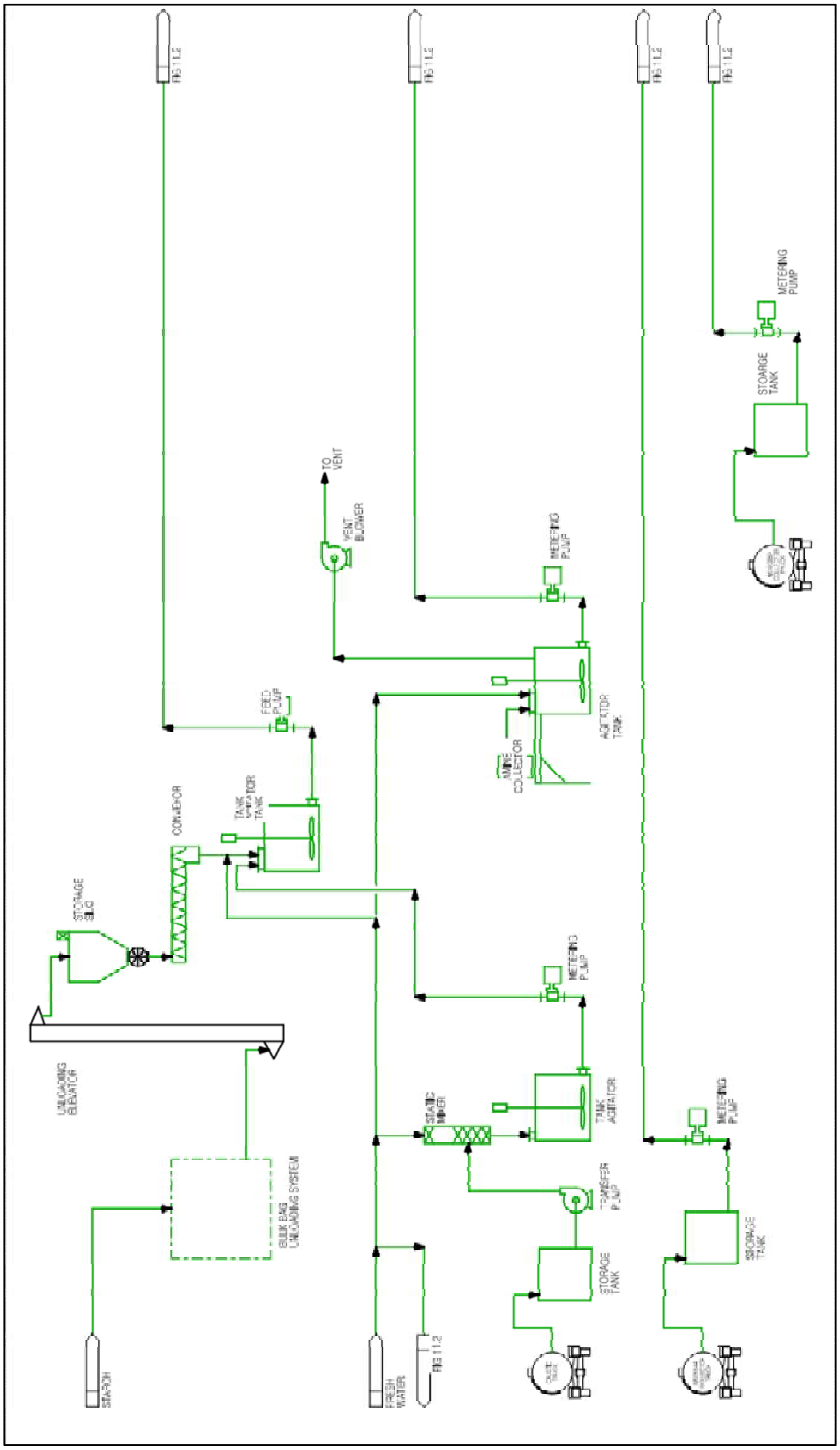
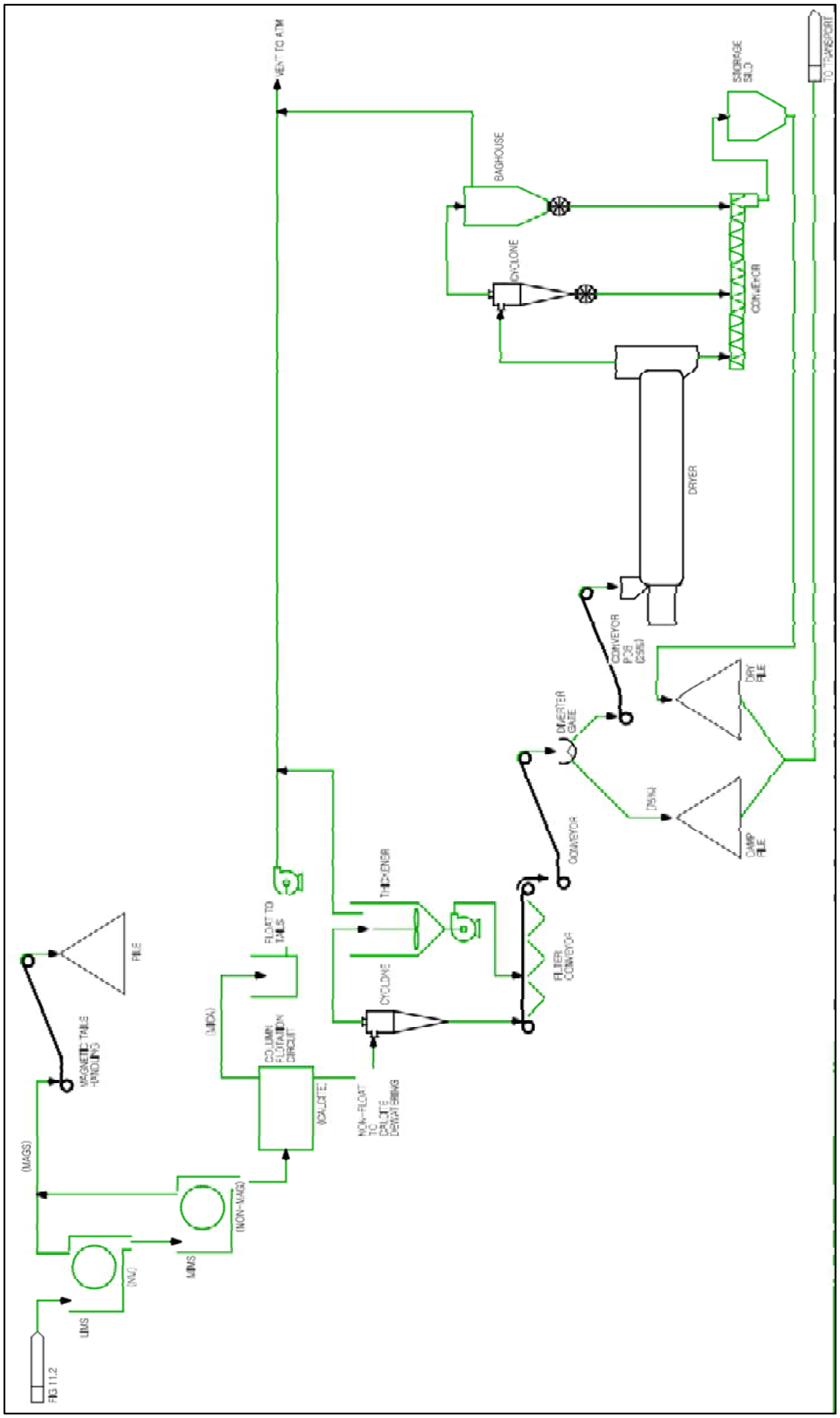


Figure 11-5, Flow Sheet – Calcite



11.6 EQUIPMENT LIST

Summarized in Tables 11.3 and 11.4 are the major equipment list for phosphate and calcite beneficiation respectively.

Table 11-3 Phosphate Process Equipment List

Quan.	Equipment Name	Description/Remarks	Kw/Kva
1	ROM Apron Feeder	1.1 m x 2.5 m steel pan	**40**
1	Primary Crusher	Roll Crusher – MMD Sizer	**150**
1	SAG Grinding Mill	8.5m diameter by 5m long with feed chute and discharge trommel	
1	SAG Mill Drive	5MW low speed synchronous motor and clutch drive	**5,000**
1	SAG Mill Feed Screen	Double Deck	**6**
6	SAG Mill Hydrocyclone	0.8 m diameter	
2	GMT Pump	3700 m3/hour	**745**
2	Cyclone Feed Pumps		
2	Cyclone Overflow Pumps		
1	Rougher Conditioner	Vertical Cylindrical w/Agitator 15 m3	**150**
10	Rougher Flotation Column	10 Circulation Pumps	**1,600**
4	1st Cleaner Flotation Column	4 Circulation Pumps	**640**
2	2nd Cleaner Flotation Column	2 Circulation Pumps	**320**
6	Scavenger Cleaner Flotation Column	6 Circulation Pumps	**960**
1	Air Compressor	Compressed Air Requirement	**1,200**
1	Building Bridge Crane		**1.5**
1	Concentrate Thickener	1900 m33, 12 m dia. X 12 m H	**90**
1	GMT Tank	340 m3	
1	Dewatering Belt Filter	1.5 m x 32 m	**15**
1	Dryer Combustion Chamber		
1	Dryer Baghouse	Exhaust Gas Handling System	**150**
1	Concentrate Dryer	2.1 m x 15.2 m, Rate of evaporation 1500 to 6000 kg/hour	**100**
1	Concentrate Product Hopper		
1	Process Water Tank	300 m3	
1	Plant Conveyance Equipment		**100**
1	Chemical Prep and Storage Area		
		Total Connected Load	**11,300**

Table 11-4 Calcite Process Equipment List

Quan.	Equipment Name	Description/Remarks	Kw/Kva
6	Magnetic Separation	LIMS System	150
4	Magnetic Separation	MIMS System	150
6	Rougher Flotation Columns		1,540
4	Cleaner Flotation Columns		1,020
1	Dewatering Cyclones and Pump		125
2	Vacuum Belt Filters		150
1	Dryer		125
1	Dust Collection and Air Handling system		300
1	Conveyance Equipment		150
1	Thickener		25
		Total Connected Load	**3,600**

12 PROJECT INFRASTRUCTURE

Designs for this study have not been completed, however estimates are completed for preliminary costing. These estimates include the work previously completed for the utilities, dams and other support infrastructure. The previous costs were reviewed and adjusted to meet the current project requirements.

12.1 Support Infrastructure – Dams

Two dams will be required for the site, water and tailings, and the associated pumps and piping for the distribution of the tailings, and the reclaiming of the process water and fresh water make up.

The water dam is not expected to change from the previous study. For this study the processed resource increased nearly 50%, however with the calcite by-product the tailings stream to the tailings management facility did not increase, and can decrease slightly. As such the dam size remained the same from the previous study.

12.2 Support Infrastructure – General

Some infrastructure will be required at the project site to support the operation of the site, site access, product loading and weighing and other needs. This infrastructure will include:

- Roads to and around the main plant area
- Parking lots
- Bathhouse, change rooms, lockers and shift meeting areas
- Offices for operations, maintenance, engineering and administrative staff
- Cafeteria and mess hall
- Onsite laboratory

12.3 Support Infrastructure – Mine

The mining operation will have its own support infrastructure needs. This can be located with the main plant or directly adjacent to the main mining area. Supporting infrastructure for the mine will include:

- Mine maintenance shop
- Ready lines for mobile equipment
- General storage facility for spare parts and other inventory

12.4 SUPPORT INFRASTRUCTURE – FIXED PLANT

The materials handling and crushing and screening facilities will require some support infrastructure. With these facilities being in close proximity to the general plant area additional support infrastructure requirements will include

- Monitoring and control building
- Small maintenance shop and storage warehouse

13 HEALTH, SAFETY, ENVIRONMENT, AND COMMUNITY RELATIONS CONSIDERATIONS

13.1 HEALTH AND SAFETY

A health and safety goal should be to protect employees, the public, and the surrounding community in which Aguia's employees work and live. This commitment is in the best interests of a company's customers, employees and all other stakeholders. As this project continues on to higher levels of study Aguia will develop and implement a Health and Safety Policy that is compliant or exceeds government standards.

13.2 ENVIRONMENT AND COMMUNITY RELATIONS

The Brazilian National Environmental Policy is executed at three different levels of public administration: federal, state and municipal. Coordinating and formulating the rules is the responsibility of the Ministry of the Environment which is directly linked to the National Environmental Council (CONAMA). CONAMA's responsibility is to establish the rules, standards and criteria guidelines so that environmental licensing can be granted and controlled by the state and municipal-level environmental agencies, which are part of the National Environmental System (SISNAMA), and by the Brazilian Institute for the Environment and Renewable Resources (IBAMA). IBAMA is the government agency under jurisdiction of the Ministry of Environment, and is responsible for executing the Brazilian Environmental Policy at the federal level.

The basic environmental process is initiated with the collection of baseline data, following the submission of a conceptual mine plan. Baseline data collection is followed by an Environmental Impact Report (RIMA), which is a summary of the environmental impact assessment (EIA) presented in simple language adequate for public communication and consultation. The EIA and RIMA are made available for public review and comment.

Once the EIA/RIMA process has been completed, an Environmental License (LA) is required to move the project forward. The LA is issued by the State Agency, under guidelines developed by the CONAMA. There are three stages in the licensing process:

- Preliminary License (LP): Indicates the environmental viability of the enterprise and approves the location and concept of the project. The LP is subject to a specific environmental impact assessment and a formal public hearing.

- Installation License (LI): Authorizes the start of the mining project, permits the engineering work and is subject to the presentation of an environmental control plan.
- Operation License (LO): Allows the beginning of the mining operation. The company is required to provide evidence that all the required environmental programs were orderly initiated and installed.

Millcreek has not to date been a part of the environmental or permitting efforts of Aguia but understand, based on a report prepared Mendo De Souza Advogados Associados for Aguia, that the area is not:

- located within environmental conservation units or their buffer zones;
- occupied by indigenous, traditional, or Quilombola communities;
- located in an agrarian reform settlement by the National Institute for Colonization and Agrarian Reform;
- and there no irregular activities or occupations being held by small-scale miners.

Golder is conducting the baseline environmental and social survey of TE and JT areas. The EIA should be completed in the next quarter and filed at the Rio Grande Environmental Agency together with a preliminary environmental license to go ahead with detailed engineering of the project.

14 MARKETS

Agroconsult Consultoria e Projetos (Agroconsult), a company specializing in market analysis of Brazilian agricultural commodities, was retained by Aguia to provided market research reports for Três Estradas in southern Brazil. These reports were prepared in June 2015 and examined markets and pricing forecasts for phosrock, calcite and SSP. Aguia intends to market phosrock and calcite products within Brazil. It is noted that SSP is an upgraded phosrock product that Aguia does not intend to produce in its facility. However, the nature of the SSP market in southern Brazil (and, specifically, for the state of Rio Grande do Sul) is fundamental to the competitive landscape for Aguia's phosrock product, which is a feedstock for SSP production.

14.1 PHOSROCK

Aguia's Três Estradas property is located in the growing farming region in southern Brazil. While the market for phosphate is strong (and expanding) domestic supply of phosphate does not exist and relies on imports, mainly from Morocco and Peru. Indeed, 100% of phosrock currently converted to SSP in RS is provided via African imports.

At present, and as proposed, Aguia would be the only company currently developing a phosrock mine in southern Brazil. Phosrock production of Três Estradas would therefore likely have strong appeal to domestic SSP producers such as Yara. The ports at Paranagua and Rio Grande account for approximately 50% of total phosrock imports into Brazil today. Additionally, Aguia should have the opportunity to export phosrock to Argentina and Uruguay which have a similar sized market and growing agricultural industry as well.

Yara Fertilizer, one of the major producers of SSP in Brazil, recently announced a R$1B (approximately US$263M) expansion of its existing SSP facilities[2]. SSP demand continues to grow in RS. Taking into consideration current demand, growth projections and capital being spent on expansions, the lack of a local source of phosrock in RS means

[2] '*Yara targets further Brazil growth with BRL 1 billion investment in Rio Grande*', April 11, 2016, Yara website.

that Aguia will be well positioned to sell the phosrock it produces. Current SSP capacity at the port of Rio Grande is 633Kt. According to Yara's recent announcement, they intend to substantially increase their capacity at Rio Grande by 2020.

14.2 Calcite

Agroconsult states that approximately 80% of Brazilian soils are acidic and need to be treated to increase crop yields and soil productivity. Agricultural lime, or 'aglime', reduces the acidity in the soil to make fertilizers more effective and increase soil productivity. Aguia intends to produce calcite, and a related aglime product, as a by-product to phosrock production and the aglime will be marketed to support growing demand in southern Brazil. Going forward, it is anticipated that future agricultural limestone demand will increase by roughly 35%, providing an increasing market for the calcite Aguia will produce. The calcite market in RS is currently very fragmented and distribution is predominantly via local co-ops.

While the aglime market itself is somewhat constrained, due to the projected high-purity of Aguia's calcite by-product, additional potential calcite markets have been identified. These are for animal nutrition, as well as in the cement and power producing industries. While these have yet to be fully examined Aguia has began discussions with the relevant parties. In addition, further work would identify Aguia's competitive position in the market in providing high-quality calcite as a by-product (and not a primary product) and thereby reducing it's cost of production.

14.3 Pricing

Agroconsult's phosrock pricing forecast is presented below in Chart 14.1 as prices cleared at the main Southern Brazilian ports. The prices consider sea freight charges, demurrage, port costs and taxes.

Figure 14-1, Average Phosrock Pricing

A forecast price for phosrock of US$210/t was utilized in this PEA for the entire Life of Mine.

Agroconsult's calcite (aglime) pricing forecast is presented below in Chart 14.2. The forecast reflects local prices paid by the final consumer (farmers).

Figure 14-2, Average Calcite (aglime) Pricing

A forecast price for calcite of US$47/t was utilized in this PEA as this is the long term pricing forecast (averaged at both the Rio Grande and Paranagua ports) after the start of production.

15 CAPITAL AND OPERATING COSTS

15.1 CAPITAL COSTS

Capital cost estimates for the Tres Estradas project are based on phosphate and calcite beneficiation, utilities, maintenance and administrative facilities, project development and various implementation expenses such as land acquisition, sediment controls, diversions, etc. To the extent possible and reasonable, estimates are based on data gathered by Millcreek. In some cases, costs were extrapolated from Millcreek's experience with other worldwide mining operations and information provided by previous studies commissioned by Aguia.

Capital estimates were developed for several major categories including: phosphate and calcite beneficiation, utilities (power, water, etc.), facilities (maintenance and administrative), project development (detailed engineering, construction, etc.) and implementation expenses. Included in the capital estimate are a contingency of 15%, and working capital of 5% for Year 1. These additional costs are for omissions or unforeseen costs that will arise, and to have sufficient funds on hand to pay the initial operating expenses for the mine and processing facilities. The LOM capital costs for the aforementioned (net of revenues for product produced in Year -1) are summarized below in Table 15.1

Table 15-1 Capital Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Pre-Production OPEX	0	0	10,244	10,244			10,244
Revenues	0	0	-26,964	-26,964			
Surface & Mineral Rights	1,316	0	0	1,316	0	0	1,316
Mining Equipment	0	0	5,622	5,622	5	49	5,671
Utilities	112	4,623	1,529	6,264	0	0	6,264
Plant Area	0	32,789	35,055	67,844	22,485	22,485	90,329
Dams	826	7,745	5,475	14,046	0	7,878	21,925
Shops	0	718	1,796	2,514	0	0	2,514
Administration Area	0	915	0	915	0	0	915
Project Development	6,432	7,675	4,716	18,823	1,470	1,470	20,293
Contingency (15%)	1,303	8,170	8,129	17,602	4,279	12,140	29,742
Working Capital (5%)	0	0	0	0	8,388	0	0
Total	**9,988**	**62,636**	**45,602**	**118,226**	**36,626**	**44,023**	**189,212**

15.1.1 Mining Equipment

Mining equipment is summarized in Table 15.2, by categories of the equipment. Mining equipment is assumed to be a capital lease over a five year period.

Table 15-2 Mining Equipment Capital Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Drills	0	0	409	409	625	5,301	5,710
Loading	0	0	481	481	1,283	9,941	9,941
Haul	0	0	1,032	1,032	1,032	24,769	25,801
Support	0	0	700	700	1,176	7,264	7,964
Ancillary	0	0	3,000	3,000	456	1,825	4,825
Total	**0**	**0**	**5,622**	**5,141**	**4,572**	**49,100**	**54,241**

15.1.2 Phosphate and Calcite Beneficiation Facilities

The capital costs associated with the facilities and equipment required to crush, grind, float, and dry the phosphate and calcite concentrate is summarized in Table 15.3.

Table 15-3 Beneficiation Capital Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Beneficiation	0	32,789	32,789	65,578	0	0	65,578
Calcite Plant	0	0	0	0	22,030	22,030	22,030
Other and Spares	0	0	1,367	1,367	456	456	1,823
Laboratory	0	0	898	898	0	0	898
Total	0	32,789	35,055	67,844	22,485	22,485	90,329

15.1.3 Utilities

The capital associated with the electric and water systems required to support the beneficiation facilities as well as the mining operation are summarized in Table 15.4 below.

Table 15-4 Utility Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Power	0	4,586	1,529	6,114	0	0	6,114
Water	112	37	0	150	0	0	150
Total	**112**	**4,623**	**1,529**	**6,264**	**0**	**0**	**6,264**

15.1.4 Dam Facilities

Capital requirements for the water reservoir and tailing storage are shown in Table 15.5. These facilities include the dams, pipelines, reclaim pumping and fencing.

Table 15-5 Dams Cost Summary

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Tailings Dam	0	332	997	1,330	0	7,878	9,208
Water Dam	826	2,477	0	3,303	0	0	3,303
Tailings Pipeline	0	0	4,346	4,346	0	0	4,346
Water Pipeline	0	4,936	0	4,936	0	0	4,936
Fence	0	0	132	132	0	0	132
Total	**826**	**7,745**	**5,475**	**14,046**	**0**	**7,878**	**21,925**

15.1.5 Maintenance & Administrative Facilities

The maintenance shops and administrative facilities capital requirements are shown in Table 15.6. These facilities include an administrative office complex, maintenance equipment, maintenance shop, warehouse and a bathhouse for the workers.

Table 15-6 Maintenance Shops and Administrative Facilities Capital

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Mine Maintenance & Tools	0	0	898	898	0	0	898
Plant Maintenance & Tools	0	0	898	898	0	0	898
Warehouse	0	718	0	718	0	0	718
Administration Building	0	659	0	659	0	0	659
Security / Parking	0	24	0	24	0	0	24
Cafeteria	0	180	0	180	0	0	180
Fence	0	53	0	53	0	0	53
Total	**0**	**1,633**	**1,796**	**3,429**	**0**	**0**	**3,429**

15.1.6 Project Development

The capital costs associated with the detailed engineering, construction and commissioning of the various facilities required for the project are shown in Table 15.7.

Table 15-7 Project Development

Category	Cost (US$000)						
	Year -3	Year -2	Year -1	Total Initial Capital	Year 1	Sustaining Capital	Total LOM
Engineering	5,703	3,422	1,711	10,836	570	570	11,407
Construction Management	38	1,872	1,754	3,663	899	899	4,563
Vendor's Assistance	0	0	100	100	0	0	100
Commissioning and Start Up	0	0	461	461	0	0	461
Other	0	1,000	0	1,000	0	0	1,000
Roads	691	1,382	691	2,763	0	0	2,763
Total	6,432	7,675	4,716	18,823	1,470	1,470	20,293

15.2 OPERATING COSTS

Operating costs for Tres Estradas are based on an owner operated fleet to execute the mine plan, and the supporting infrastructure to maintain the operation and handle and process the phosphate and calcite. Operating costs are based on information gathered or developed by Millcreek. In many cases, the operating costs were developed from a bottom up analysis of annual material volumes, equipment productivity estimates, operating hours, labor requirements and various cost estimating guides. Other costs were derived from Millcreek's experience and information provided by previous studies commissioned by Aguia.

The average operating costs for the Tres Estradas project are below in Table 15.8. Table 15.8 presents the costs for the mine, beneficiation of the material, and general and administrative. Operating costs for the phosphate is $97.89 per tonne of concentrate. The phosphate carries all of the mining, G&A, and crushing and grinding, plus the cost of the flotation of the phosphate.

When the operating costs are prorated by the revenues for phosphate and calcite, then the phosphate operating costs are reduced to $65 per tonne of concentrate. The basis for the proration are:

- Operating costs, mine, G&A, crushing and grinding, are split on a revenue basis.
- LOM revenue split is 57% / 43% (phosphate / calcite). The splits are calculated annually for the project.

Table 15.8 Operating Cost Summary

Category	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Total
Phosphate ROM (t) (000's)	2,001	3,001	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,137	58,637
Waste (t) (000's)	2,805	6,775	13,909	16,743	19,126	22,110	22,700	16,991	15,089	14,216	11,897	10,891	8,857	3,067	185,175
Produced Phosphate (t) (000's)	501	542	532	473	482	469	452	460	443	438	446	453	439	402	6,531
Produced Calcite (t) (000's)	76	710	1,701	1,725	1,790	1,877	1,831	1,876	1,874	1,833	1,873	1,923	1,917	1,726	22,731
Mining															
Contract Haul	0	0	0	0	2,519	3,642	3,404	1,673	0	0	0	0	0	0	11,238
Staff Labor & Benefits	2,039	2,818	3,470	3,626	3,900	4,258	4,388	4,079	3,919	3,916	3,828	3,730	3,466	2,580	50,015
Fuel/Lube/Power	3,258	4,769	7,242	8,070	9,086	10,476	11,282	9,413	9,256	9,208	8,695	8,342	7,695	4,519	111,310
Materials & Supplies	2,471	3,299	5,057	5,639	6,351	7,297	7,816	6,488	6,338	6,285	5,900	5,654	5,194	3,046	76,836
Blasting	1,423	2,895	5,451	6,291	6,996	7,880	8,054	6,364	5,801	5,542	4,855	4,558	3,955	2,133	72,199
Reclamation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Mining	9,191	13,780	21,220	23,626	28,851	33,552	34,944	28,017	25,314	24,950	23,279	22,284	20,311	12,279	321,597
Cost ($/t) ROM	4.59	4.59	4.72	5.25	6.41	7.46	7.77	6.23	5.63	5.54	5.17	4.95	4.51	2.97	5.48
Total Mining Cost $/ t mined	**1.91**	**1.41**	**1.15**	**1.11**	**1.22**	**1.26**	**1.28**	**1.30**	**1.29**	**1.33**	**1.42**	**1.45**	**1.52**	**1.70**	**1.32**
Total Cost $/t Phosphate	**18.36**	**25.45**	**39.87**	**49.96**	**59.86**	**71.60**	**77.27**	**60.89**	**57.10**	**57.03**	**52.22**	**49.17**	**46.31**	**30.51**	**49.24**
Phosphate Benefication															
Labor & Benefits	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	20,866
Fuel/Lube/Power	4,261	6,252	9,219	9,176	9,203	9,182	9,171	9,172	9,172	9,171	9,171	9,171	9,171	8,431	119,921
Reagents	1,079	2,419	4,551	4,801	4,640	4,764	4,821	4,824	4,824	4,824	4,824	4,824	4,824	4,435	60,453
Materials & Supplies	671	2,570	3,836	5,734	5,734	5,734	5,734	5,733	5,734	5,734	5,734	5,734	5,734	5,733	70,148
Total Phosphate Cost	7,501	12,732	19,096	21,201	21,067	21,171	21,217	21,219	21,220	21,219	21,219	21,219	21,218	20,090	271,388
Cost ($/t) ROM	3.75	4.24	4.24	4.71	4.68	4.70	4.72	4.72	4.72	4.72	4.72	4.72	4.72	4.86	4.63
Total Cost $/t Phosphate	**14.98**	**23.51**	**35.88**	**44.84**	**43.71**	**45.18**	**46.91**	**46.11**	**47.87**	**48.50**	**47.60**	**46.82**	**48.38**	**49.92**	**41.55**
Calcite Benefication															
Labor & Benefits	497	497	497	497	497	497	497	497	497	497	497	497	497	497	6,955
Fuel/Lube/Power	293	2,734	6,547	6,639	6,890	7,227	7,049	7,221	7,213	7,056	7,208	7,400	7,378	6,646	87,500
Reagents	0	0	0	0	1	2	3	4	5	6	7	8	9	10	55
Materials & Supplies	251	2,242	5,353	5,428	5,633	5,907	5,763	5,903	5,896	5,768	5,892	6,049	6,031	5,434	71,550
Total Calcite Cost	1,040	5,473	12,396	12,563	13,020	13,633	13,312	13,625	13,611	13,327	13,604	13,955	13,914	12,586	166,060
Cost ($/t) ROM	0.52	1.82	2.75	2.79	2.89	3.03	2.96	3.03	3.02	2.96	3.02	3.10	3.09	3.04	2.83
Total Cost $/t Calcite	**13.69**	**7.71**	**7.29**	**7.28**	**7.27**	**7.26**	**7.27**	**7.26**	**7.26**	**7.27**	**7.27**	**7.26**	**7.26**	**7.29**	**7.31**
General & Administrative															
Labor & Benefits	568	568	568	568	568	568	568	568	568	568	568	568	568	568	7,952
Labor - Other	792	959	1,090	1,122	1,180	1,257	1,284	1,222	1,187	1,187	1,170	1,153	1,097	914	15,614
Other	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	1,625	22,750
Total G&A	2,985	3,152	3,283	3,315	3,373	3,450	3,477	3,415	3,380	3,380	3,363	3,346	3,290	3,107	46,316
Cost ($/t) ROM	1.49	1.05	0.73	0.74	0.75	0.77	0.77	0.76	0.75	0.75	0.75	0.74	0.73	0.75	0.79
Total G&A Cost $/t Phosphate	**5.96**	**5.82**	**6.17**	**7.01**	**7.00**	**7.36**	**7.69**	**7.42**	**7.63**	**7.73**	**7.54**	**7.38**	**7.50**	**7.72**	**7.09**
Total Direct Costs	20,718	35,136	55,995	60,704	66,312	71,805	72,950	66,276	63,526	62,877	61,465	60,804	58,733	48,061	805,363
Direct Cost ($/t) ROM	10.36	11.71	12.44	13.49	14.74	15.96	16.21	14.73	14.12	13.97	13.66	13.51	13.05	11.62	13.73
Total Phosphate Cost $/t Phosphate	**39.31**	**54.78**	**81.92**	**101.81**	**110.56**	**124.15**	**131.87**	**114.42**	**112.59**	**113.25**	**107.36**	**103.38**	**102.18**	**88.15**	**97.89**
Total Cost $/t Calcite	**13.69**	**7.71**	**7.29**	**7.28**	**7.27**	**7.26**	**7.27**	**7.26**	**7.26**	**7.27**	**7.27**	**7.26**	**7.26**	**7.29**	**7.31**

15.2.1 Workforce

Labor costs (hourly, general and administrative) are based on wage information derived from previous studies commissioned by Aguia. These costs have been adjusted to reflect current exchange rates. Labor burdens have been assumed for both salaried and non-salaried employees. Labor burdens account for social security expenses, insurance, vacations, etc. Table 15.9 summarized the labor requirements for the project.

Table 15-9 Total Manpower Summary

Category	Number
General and Administrative	24
Mine Staff	31
Mine Operations	102
Mine Maintenance	61
Plant Staff	21
Plant Operations	60
Plant Maintenance	24
Total	**323**

15.2.2 Materials & Supplies

Costs associated with materials, supplies and consumables were based on equipment operating hours and consumption rates for fuel which were derived from the mine plan volumetrics and oil shale handling and retorting facility rates. Contract mining costs were based upon relevant information provided by Aguia. Costs for fuel, lube and electricity are based on local pricing:

- Diesel fuel at $0.71/liter
- Lube at $3.20/liter
- Electricity at $0.0807/kWh

Explosive costs are derived from the amount of explosives required to blast waste and phosphate. A powder factor of 0.25 kg/t for waste and 0.25 kg/t for phosphate were assumed. Due to the annual precipitation and the potential for many wet holes, a 100% use of emulsion is assumed. Emulsion price is assumed at $1.03 per kg. Blasting supplies such as caps, primers and cord are estimated at 15% of explosive costs.

15.2.3 Other Operating Costs

Other operating costs include contracted services for IT support, consultants, reclamation efforts, etc.

15.2.4 Contingency

No Contingency was included in the operating cost estimate.

16 ECONOMIC ANALYSIS

16.1 PRINCIPLE ASSUMPTIONS

Annual phosphate production of peaks at 4.5 Mt ROM, fresh rock to the beneficiation plant, is based upon the mine plan as described in Section 10 of this report. The mine commences operation in Year -1 and provides phosphate for the plant to be commissioned in Year 1. Full production is reached in Year 3, as the higher grade saprolite is processed early in the mine life. The mine plan presently assumes 14 years of operation, and phosphate concentrate production from the plant averages 466,000 tonnes per year, with calcite production averaging 1.8Mt per year.

Presently there are no off-site costs allocated for this study. All costs and revenues are based on a gate price of the phosphate and calcite concentrate. Commodity sale prices are discussed in Section 14 of this report and the following Table 16.1 summarizes the economic basis, less operating costs as discussed in Section 15.

Table 16-1 Principle Assumptions

Assumption/Basis	Value	Basis
Exchange Rate	3.80:1	BRL:USD
Phosphate Price	$210.00	USD/t concentrate
Calcite Price	$47.00	USD/t concentrate
Depreciation	14.29%	7 Year Straight Line
Production Royalty	2%	Gross Proceed
CFEM	2%	Gross Proceeds
Income Tax	34%	

16.2 TAXATION

16.2.1 Tax Assumptions

The following assumptions were made concerning the role of taxation in our economic modelling:

- 100% of the sales of phosphate rock and calcite shall to local markets in Rio Grande do Sul;
- Exemption of PIS and COFINS on sales and maintenance of recoverable credits from purchases;

- Exemption of the ICMS on local sales (inside the State of Rio Grande do Sul);
- PIS and COFINS taxed on process and mine OPEX;
- PIS and COFINS taxed on capital cost items;
- Review of the initial tax loss of balance related to the investment values that have already occurred in the Project.

16.2.2 Description and Legal Basis

- PIS and COFINS credits: Estimate of recoverable tax credits of PIS and COFINS on the Project's OPEX and CAPEX. This has legal basis in Article 3 of the Federal Laws (No.s 10,637/2002, 10,833/2003 and 10,865/2004);
- PIS and COFINS credit flow, offsetting with IRPJ / CSLL: The annual balances of recoverable PIS and COFINS credits on OPEX and CAPEX, as well as the stream of credits to be offset with payable IRPJ and CSLL, are accounted for in this study. This has legal basis in Article 3 of the Federal Law (No.s 10,637/2002, 10,833/2003 and 10,865/2004);
- Accelerated Depreciation: The accelerated depreciation rate for productive assets is allowed for operations on a 3-shifts working period. This has legal basis in Article 312 of Regulation of Federal Decree (3,000/1999);
- CFEM: The incidence and calculation basis of the CFEM is estimated in accordance with the Article 6 of the Federal Law (No. 7,990/1989), Article 2 of the Federal Law (No. 8,001/1990) and in Chapter III, Article 13 to 16, of Federal Decree (No. 1/1991). A rate of 2.00% was applied.
- Calculation basis for IRPJ/CSLL: Since there is revenue in Year-1 a calculation basis for IRPJ/ CSLL is applied. Depreciation expenses and tax offsets have also been adjusted for this period;
- Tax Losses: The balance of tax losses to be carried forward (related to the Aguia's financial performance as of May, 2016) was included. This has a legal basis in Articles 509 to 515 of regulation of Federal Decree (No. 3,000/1999).

16.2.3 Relevant Acronyms

- CFEM – Compensação Financeira Pela Exploração de Recursos Minerais (royalty paid to the Brazilian government);
- IRPJ – Imposto de Renda (income tax);

- CSLL – Contribuição Social Sobre o Lucro Líquido (‘social contribution’ on net profits);
- PIS and COFINS – Programa de Integração Social (PIS) and Contribuição da Seguridade Social (COFINS) (‘social contribution’ to federal authorities).

16.3 CASHFLOW

Table 16.2 summarizes the cash flows for the project. Contingency of 15% was added to the capital costs. Using a Pre-Tax basis, the NPV, discounted 7.5%, is $571.8M, and the IRR is 50.4%. The Pre-Tax basis excludes the Corporate Tax and the Indirect Tax Cash Adjustments. On an After-Tax basis, the NPV, discounted 7.5%, is $400.0M. The IRR on an After-Tax basis is 43.0%. The NPV is after an investment of $134.9M ($118.2M net of revenues in Year -1) for direct Capital costs and $10.2M in Operating Capital Costs. During the startup period of the beneficiation plant, phosphate concentrate will be produced and a revenue of $27.0M will offset some of the capital investment.

Table 16.2 – Life Of Mine Cash flow (000's)

		2017 Year -3	2018 Year -2	2019 Year -1	2020 Year 1	2021 Year 2	2022 Year 3	2023 Year 4	2024 Year 5	2025 Year 6	2026 Year 7	2027 Year 8	2028 Year 9	2029 Year 10	2030 Year 11	2031 Year 12	2032 Year 13	2033 Year 14	2034 Year 15	Total
Production																				
Phosphate Rock	k tonnes	0	0	501	2,001	3,001	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,137	0	**59,138**
Product																				
Phosphate t conc	kt	0.0	0.0	133.7	500.6	541.5	532.2	472.9	482.0	468.6	452.3	460.2	443.3	437.5	445.8	453.2	438.6	402.4	0.0	**6,665**
Calcite t prod	kt	0.0	0.0	0.0	76.0	710.2	1,700.7	1,724.6	1,789.9	1,877.4	1,831.3	1,875.9	1,873.9	1,833.0	1,872.5	1,922.5	1,916.6	1,726.4	0.0	**22,731**
Price																				
Phosphate	$ / t conc	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0	$210.0
Calcite	$ / t conc	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0	$47.0
Revenue / Cost of Sales / Royalty																				
Gross Revenue		0	0	28,087	108,702	147,094	191,700	180,357	185,344	186,639	181,046	184,801	181,168	178,029	181,627	185,527	182,192	165,654	0	**2,467,966**
Cost of Sales																				
Marketing Phospahte	**2.0%**	0	0	562	2,103	2,274	2,235	1,986	2,024	1,968	1,899	1,933	1,862	1,838	1,872	1,903	1,842	1,690	0	**27,992**
Marketing Calcite	**2.0%**	0	0	0	71	668	1,599	1,621	1,682	1,765	1,721	1,763	1,761	1,723	1,760	1,807	1,802	1,623	0	**21,367**
Royalty and Taxes																				
Production Royalties	**0.0%**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
CFEM	**2.0%**	0	0	562	2,174	2,942	3,834	3,607	3,707	3,733	3,621	3,696	3,623	3,561	3,633	3,711	3,644	3,313	0	**49,359**
Net Smelter Revenue		**0**	**0**	**26,964**	**104,353**	**141,210**	**184,032**	**173,143**	**177,930**	**179,174**	**173,805**	**177,409**	**173,921**	**170,907**	**174,362**	**178,106**	**174,904**	**159,028**	**0**	**2,369,247**
Cash production costs																				
Total Operating Costs		**0**	**0**	**10,244**	**22,617**	**36,891**	**58,814**	**61,766**	**67,491**	**73,135**	**74,306**	**67,348**	**64,500**	**63,807**	**62,278**	**61,565**	**59,392**	**47,952**	**921**	**833,026**
EBITDA		**0**	**0**	**17,126**	**83,180**	**106,996**	**129,850**	**116,264**	**115,592**	**111,571**	**105,146**	**115,259**	**114,528**	**112,144**	**116,996**	**121,397**	**120,197**	**114,801**	**-836**	**1,600,212**
Amortization and Depreciation																				
Total Amortization and Depreciation				**7,689**	**32,731**	**39,278**	**41,185**	**34,526**	**12,560**	**7,710**	**6,784**	**5,875**	**5,214**	**4,348**	**3,268**	**2,319**	**1,318**	**785**	**340**	**205,929**
Net Income Before Tax		**0**	**0**	**9,438**	**50,450**	**67,718**	**88,665**	**81,738**	**103,032**	**103,860**	**98,361**	**109,384**	**109,315**	**107,797**	**113,728**	**119,078**	**118,879**	**114,016**	**-1,175**	
Tax Loss Carry Forward																				
Taxable Income After Tax Losses Applied				**6,606**	**46,431**	**67,718**	**88,665**	**81,738**	**103,032**	**103,860**	**98,361**	**109,384**	**109,315**	**107,797**	**113,728**	**119,078**	**118,879**	**114,016**	**0**	
Federal Income Tax	**34%**			2,246	15,787	23,024	30,146	27,791	35,031	35,313	33,443	37,191	37,167	36,651	38,668	40,487	40,419	38,766	0	**472,127**
State/Provincial Income Tax	**0%**			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Property Tax	**$0**			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Taxes				**2,246**	**15,787**	**23,024**	**30,146**	**27,791**	**35,031**	**35,313**	**33,443**	**37,191**	**37,167**	**36,651**	**38,668**	**40,487**	**40,419**	**38,766**	**0**	**472,127**
Federal Taxes Offset/ Refund																				
PIS/COFINS Offset		0.0	0.0	406.8	15,786.7	7,758.3	5,318.7	5,499.3	5,989.9	6,051.8	6,211.8	5,663.2	5,569.5	5,283.4	5,199.7	4,964.5	4,710.1	3,745.1	0.0	**88,159**
PIS/COFINS Refund		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.5	**104**
Adjustment for Recoverable PIS & COFINS (+)		-	-	407	1,443	2,676	4,632	4,888	5,153	5,531	5,647	5,198	5,107	5,043	4,912	4,856	4,685	3,726	85	**63,991**
Capital																				
Total Capital		**9,988**	**62,636**	**62,322**	**41,193**	**8,539**	**7,605**	**10,399**	**6,471**	**7,022**	**5,785**	**5,746**	**2,983**	**3,580**	**1,344**	**312**	**240**	**240**	**-8,388**	**228,019**
Pre Tax Undiscounted Cash Flow		**-9,988**	**-62,636**	**-45,602**	**40,544**	**95,780**	**117,613**	**100,977**	**103,967**	**99,018**	**93,713**	**104,315**	**106,438**	**103,521**	**110,741**	**116,228**	**115,272**	**110,836**	**7,467**	**1,308,203**
After Tax Undiscounted Cash Flow		**-9,988**	**-62,636**	**-47,441**	**40,544**	**80,514**	**92,785**	**78,686**	**74,926**	**69,757**	**66,482**	**72,788**	**74,840**	**72,153**	**77,273**	**80,706**	**79,564**	**75,815**	**7,571**	**924,339**
Cumulative After Tax Undiscounted Cash Flow		**-9,988**	**-72,624**	**-120,065**	**-79,522**	**993**	**93,778**	**172,464**	**247,390**	**317,146**	**383,629**	**456,416**	**531,257**	**603,410**	**680,683**	**761,389**	**840,952**	**916,768**	**924,339**	

Figure 16-1, After-Tax Annual Cash Flows

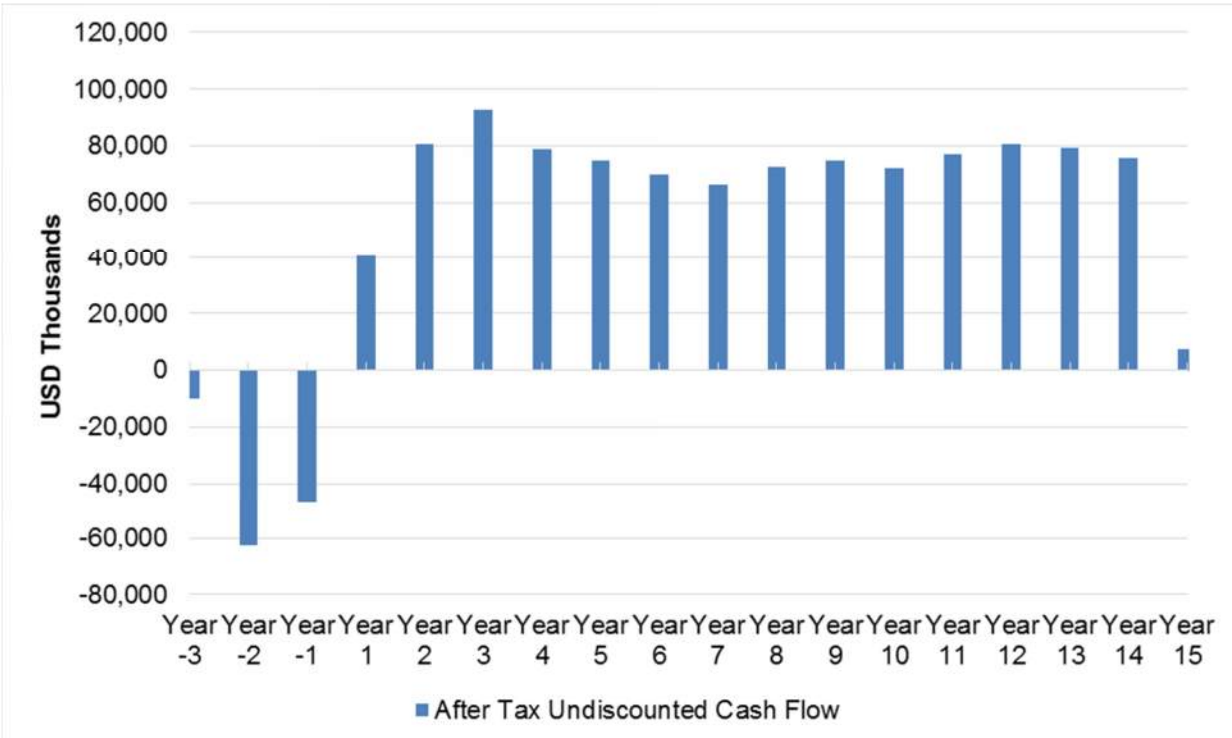
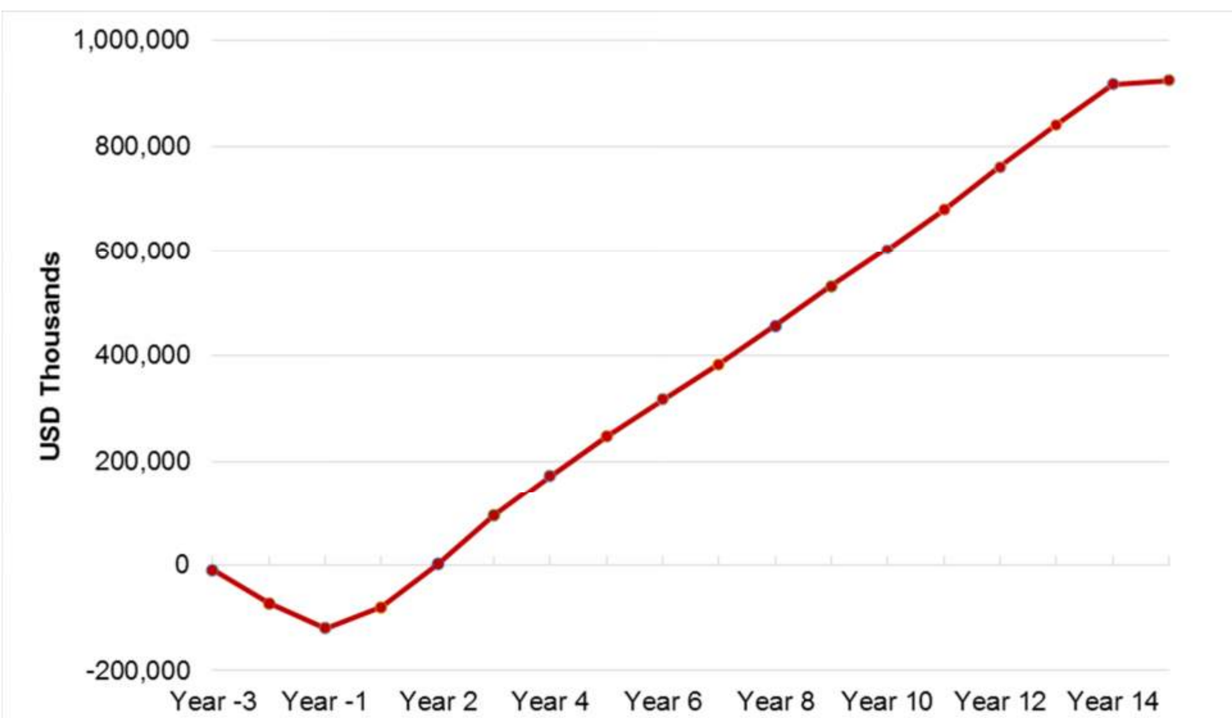


Figure 16-2, After-Tax Cumulative Cash Flows



Summarized below are after tax NPV's at various discount rates. Payback for the project will occur in Year 3.

Table 16-3 NPV at Discount Rates

Discount Rate	NPV (000's)
5%	$523,803
7.5%	$400,014
10%	$307,722

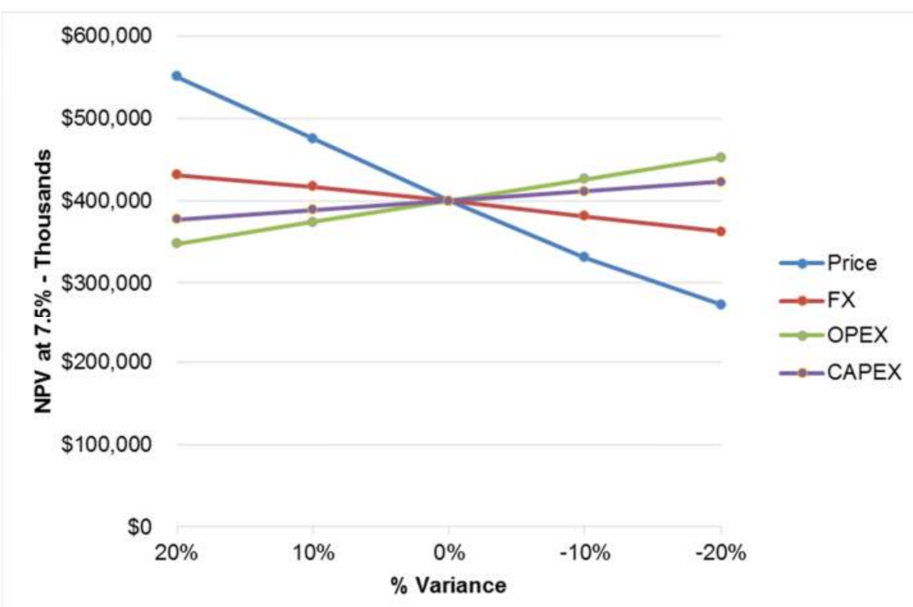
16.4 SENSITIVITY ANALYSIS

Sensitivity analysis was performed on the Project to gauge its strength against changes to Project variables:

- Phosphate and Calcite Price
- Currency Exchange Rate
- Operating costs
- Capital costs

Figure 16.3 indicates the Project is more sensitive to commodity price changes than the other changes.

Figure 16-3, Sensitivity Analysis – Post Tax NPV At 7.5% Discount



16.5 FINANCING

16.5.1 Overview

As described above the outcome of this PEA indicates that Tres Estradas, under certain circumstances, has the potential to provide a robust return on investment. The project is well positioned to take advantage of well-established and growing markets, as described in Section 14, above. The project can be summarized, at a PEA level, as having an after-tax NPV of approximately US$400M at a discount rate of 7.5% generating an IRR of 43% requiring an estimated capex of approximately US$118M (net of Year -1 revenues) for construction of a standalone phosrock and calcite operation.

Millcreek has reviewed a number of factors that must be considered when addressing the prospects for financing of a project such as Tres Estradas. These include:

- The local southern Brazil phosphate and calcite markets, the competitive landscape, and down-stream capacity expansions of SSP (for which production phosrock is the feedstock);
- The funding participation of existing and strategic shareholders, the potential for off-take agreements, as well as for associated project funding;
- Availability of standard and Government sponsored project debt within a low cost environment;
- The ability of the Company its project development team to raise equity as required and the competitive landscape from a perspective of investment and asset acquisition in the agriculture industry of Brazil.

Based upon this review and in the context of the current market, Millcreek believes it is reasonable to assume that Aguia, and its project development team (including strategic shareholders), have the experience and ability to source the funding necessary to build and commission the described project.

16.5.2 Financial Information, Aguia

Aguia currently has a market capitalization of approximately AUD$44M at the time of this report. This compares to the capital estimate of US$ 118.5M referred to in section 15.1. Aguia's development to date has been entirely financed through equity investment and the company carries little debt. At 31 December 2015 Aguia had net assets of AUD$ 23.1M and with borrowings of AUD$0.5M. In the half year to 31 December 2015 Aguia had revenue of AUD$33,100. The borrowings at December 31 have been retired.

Since 2010 when it first listed on the Australian Stock Exchange, Aguia has raised AUD 37.2 million in equity investment.

16.5.3 Off-Take Potential

Over the course of the last 12 months Aguia management has been involved in a number of preliminary strategic discussions with potential off-take partners for phosrock and calcite both regionally and abroad. Relevant non-disclosure agreements (NDAs) with confidentiality clauses, have been executed. Based on the willingness and level of interest for potential partners to enter in NDAs, and the fact that Millcreek believes Aguia will enjoy various market advantages described above (including displacing higher price existing imports, and geographical proximity to SSP producers) it is reasonable to assume that Aguia will have the ability to negotiate off-take agreements that would satisfy the requirements of debt providers. An off-take agreement would not only provide an assured market for Aguia's production but could include, under certain circumstances, accompanying project financing via a pre-paid off-take, equity investment and/or asset level investment.

16.5.4 Strategic Shareholders

Sulliden Mining Capital, is a well-established, TSX-listed, Canadian private equity fund that focuses on investment in developing resource companies. Its management and operational team have had a long history of successfully investing in, running, operating and constructing global mining projects. Over the course of the last 15 years Sulliden's management team has successfully has successfully developed and financed global mining projects including Desert Sun Mining, Central Sun Mining, Sulliden Gold, Brazil Potash Corp., Consolidated Thompson and BeloSun Mining. Sulliden currently holds ~19% of Aguia, has publically stated that it will remain a long-term and supportive shareholder and has committed to assisting Aguia as it moves towards production. Sulliden consolidates Aguia on its balance sheet as there is material management and control overlap between the two companies. Since Sulliden's initial investment into Aguia in early 2015, the make-up of shareholders has evolved to include large global resource funds and institutions. This evolution of the shareholder base, coupled with Sulliden's stated long-term investment objectives, suggests that Aguia (under the correct conditions) will have access[3] to a global institutional network of capital for equity and / or various debt instruments in order to finance the project development.

16.5.5 Debt Financing

Aguia has entered into initial discussions with the Brazilian Development Bank ("BNDES") and is working through the qualification process. If accepted, this will provide another potential source of funding for Tres Estradas development. The project fits within the well-publicized mandate of BNDES "*To foster sustainable and competitive development in the Brazilian economy, generating employment while reducing social and regional inequalities*". BNDES is the main government financing agent for development of new projects in Brazil. Since its foundation in 1952, BNDES has played a fundamental role in stimulating the expansion of industry and infrastructure in the country.

Aguia has been contacted by and has had preliminary discussions with a number of potential conventional and non-conventional project debt providers. These discussions have been confidential, and held under the terms of non-disclosure agreements (NDAs). All parties have expressed interest in providing a portion of the financing requirements via various debt instruments. Due diligence continues and the Company intends to continue with the de-risking process via permitting and final feasibility before advancing discussions on debt financing. However, given the expressions of interest received to date, the opportunity for project debt to contribute to the ultimate financing strategy for the asset is tangible.

16.5.6 Equity

As described above, it is reasonable to assume that Aguia's management, in conjunction with its development team and strategic shareholder, has the experience and ability to fund a number of global mining initiatives from initial exploration and development through to production. It is reasonable to expect that the management team and its current shareholders will have the ability to supplement debt-financing strategies with an equity component, should it be considered desirable. In addition, the Company has been approached by a number of confidential groups looking for cornerstone investments into the project and the Company. Management has engaged in discussions with these potential equity partners, however shareholder dilution is a major consideration and at this time a major equity investment is not required.

[3] Source; Bloomberg 2016, Sulliden Mining Capital 2016

16.5.7 Recent Deals

Over the last decade the Brazilian phosphate market has been witness to in excess of US$4B in acquisitions. Aguia's Tres Estradas projects is understood to be the only phosphate producer under development in southern Brazil (this in turn may provide various strategic financing options to Aguia as this trend looks to continue).

Highlighted transactions include:

- Yara acquisition of Adubos Trevo in 2000;
- Yara acquisition of Fertibras in 2006;
- Yara acquisition of Bunge in 2013;
- Yara acquisition of Galvani in 2014;
- BTG acquisition of Rio Verde in 2015;
- ICL acquisition of Fobrasil in 2014;
- Mosaic acquisition of ADM in 2014;
- China Moly acquisition of Anglo Phosphate (for US$2.5B) in 2016.

17 OPPORTUNITIES, RISKS AND RECOMMENDATIONS

There are potential opportunities and risks that have been identified in various areas of the project. These opportunities and risks pertain to resource definition and expansion, mineral processing, geotechnical and hydrologic conditions and geochemical characterization of waste.

17.1 Project Opportunities

17.1.1 Exploration Drilling

Through reclassification of inferred or indicated resources, or by identifying additional areas of the deposit, further drilling in and around Tres Estradas and Joca Tavares will increase the geologic assurance of the resource, as well as the basis for potential reserves that might be identified through a pre-feasibility level of study, or higher.

17.1.2 Mineral Processing

Currently, test work from Eriez has demonstrated that a phosphate concentrate of acceptable grade and recovery can be produced from the oxidized material through the use of a single rougher column flotation stage. However, an additional cleaner flotation stage might lead to improved grades and recoveries (this concept has not been further developed at present due to a shortage of sample material).

In addition, an opportunity exists to produce a calcite concentrate from the fresh rock rougher column tailings through the use of column flotation. Due to a shortage of sample material testing was restricted to mechanical cells. While recovery was good, it is possible that the use of column floatation may further improve recoveries.

The fresh carbonatite and saprolite rock types require different collectors for flotation and preliminary tests indicated that neither of the collectors was effective for both types. The fresh carbonatite requires two stages of cleaning, where the saprolite produces an acceptable concentrate in the rougher stage. The current test program focused on optimizing the flotation performance of each type. In future it is recommended that blends of the two types be tested.

Finally, although concentrate grades were improved when subject to further magnetic separation these results were based on testing of blended concentrates produced from column flotation and definitive conclusions could not be drawn for this study. As described above, current work has shown that concentrate grade can be significantly improved through the use of magnetic separation.

Additional sampling and testing will further define these opportunities.

17.1.3 Fines Processing

Several technologies exist that focus on processing of fines material, and have been shown to be commercially viable for production at other operations. These include use of an air-sparged hydrocyclone (ASH) which relies on flotation within a cyclone, as well as a system that makes use of high-speed centrifuges and micro-cavitation to pre-treat concentrator fed and improve recoveries.

Additional study of the applicability, and commercial feasibility, of alternate technologies such as these may lead optimization of the proposed processing plan to improve grades and recoveries, with the effect of increasing project value.

17.2 Project Risk

A summary of potential project risks (and, where applicable, recommended mitigation measures) is included below.

17.2.1 Construction

Presently there has not been a study to determine adequate supply of suitable construction material for the dams, roads and plant site. This would presumably be considered at a higher level of project feasibility study.

17.2.2 Hydrology and Geotechnical

While there has been a high-level geotechnical assessment of the area (see Section 10.7) presently no detailed geotechnical or hydrologic study has been completed. This could impact assumptions on the construction of the dams (and foundations), the pit wall stability and the availability of water for the process.

The initial pit geotechnical assumptions were planned on a 100m deep pit; with this revised PEA the depth of the pit has increased to over 250m meters. Site specific hydrologic and geotechnical studies would resolve some of these uncertainties at a higher level of feasibility study.

17.2.3 Waste Management

With the removal of calcite for from the tailings, which acts as a “buffer” against acid rock drainage (ARD) the geochemical characterization should be reviewed to determine potential environmental impacts. Geochemical characterization should also be competed for the waste rock to determine if environmental controls need to be added for the waste dump.

17.2.4 Metallurgy

While the level of metallurgical testing performed as part of this study is considered appropriate for a PEA, it is possible that actual processing performance will not match predicted. As outlined the 'Project Opportunities', above, further metallurgical sampling, and process pilot testing would be better define the impact of processing on project economics.

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19 APPENDIX A: JORC TABLE 1

TRÊS ESTRADAS JORC TABLE 1

SECTION 1: SAMPLING TECHNIQUES AND DATA

Sampling Techniques	Soil samples were collected every 25 meters along lines spaced 100 meters apart, for a total of 52 soil samples. All soil samples targeted the B Horizon soil profile. 77 rock samples were collected from within the DNPM 810.090/91 area. One historical trench exists on the tenement, Aguia sampled three vertical channels; in each channel, two samples were collected. Drilling comprised 78 core boreholes (10,801.45 meters), 136 auger boreholes (770 meters), and 154 reverse circulation boreholes (3,304 meters). Auger - Drilling was completed up to a depth of 15 meters within the saprolite unit.
	Auger - borehole collars were surveyed according to the local UTM coordinate system (SAD 69, Zone 21S) using a handheld GPS receiver before drilling started. No downhole surveys were performed. N.B. Auger data were not used for resource estimation purposes. Reverse Circulation Drilling - All borehole collars were surveyed according to the local UTM coordinate system (SAD 69, Zone 21S), using a differential GPS receiver before drilling started, and once drilling had been completed. No downhole surveys were performed. Core Drilling - All borehole collars were surveyed according to the local UTM coordinate system (SAD 69, Zone 21S), using a differential GPS receiver before drilling started, and once drilling had been completed. Beginning in the second drilling program, downhole surveys were completed using a Maxibore down-hole survey tool collecting orientation readings at 3-meter intervals.
	Auger - 1 meter samples collected, 2 kilograms of material collected for each field sample. Samples were taken at 1-meter intervals. These samples were analyzed for phosphorus, calcium, and aluminium content with a portable x-ray fluorescence (XRF) analyzer. If any sample yielded greater than 1.31 % phosphorus (3% P2O5), all samples from that auger borehole were shipped to the laboratory for assaying. Reverse Circulation Drilling - Every meter drilled produced two aliquots with a minimum weight of 500 grams and a maximum of 2 kilograms. Core Drilling - The majority of sample intervals range between 0.5 and 1.5 meters, averaging 1.0 meter and honour geological contacts. Samples consisted of half core and were collected fromcore cut lengthwise using a diamond saw. Three readings per meter were performed with a portable XRF device. Samples from the first and second exploration program were sent to the ALS laboratory in Vespiano, Brazil for preparation. Prepared samples were sent to Lima, Peru or Vancouver, Canada for assaying. Samples from the third and fourth exploration programs were prepared and analyzed at SGS Geosol laboratories in Vespasiano, Brazil
Drilling Techniques	Auger - tipper scarifier motorized augers were used to drill the auger boreholes.
	Reverse Circulation – Drilling utilized a face sampling Hard Formation Bit with Tungsten buttons and a diameter of 5 ½ inches. No downhole surveys were completed.
	Core Drilling - Drilling utilized HQ equipment for weathered material and NQ for fresh rock. Down hole surveys were not performed on 19 core boreholes completed during the first drilling program. Downhole surveys were performed on 3-meter intervals using a Maxibore down-hole tool on all boreholes completed during the second, third, and fourth drilling program. No core orientation has been carried

SECTION 1: SAMPLING TECHNIQUES AND DATA

Drill Sample Recovery	Auger - Auger recovery was not monitored. Reverse Circulation Drilling – recovery was monitored by sample weight. The minimum recovery was 85 percent. Core Drilling - Recovery by sample and by drill run was recorded; core recovery exceeded 90 percent in 90 percent of all core borehole samples.
	Reverse Circulation Drilling – Logging includes description of lithology and weathering. Core Drilling - Detailed geological logs in appropriate logging form were completed. All core has been photographed dry before sampling.
	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
Logging	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
	All of the relevant intersections were logged.
Sub-Sampling Techniques and Sample Preparation	Core was sawn in half, with one half sent for assaying and one half being retained for reference. Friable core was split down the centerline using a spatula or similar tool, with half being retained and half sent for assaying.
	Auger - One meter auger samples were placed on a plastic sheet; large pieces were broken down manually. The sample was then homogenized by shaking the sheet with a rolling motion. Reverse Circulation Drilling - Dry and moist samples were split using a riffle splitter; wet samples were dried prior to homogenization and sampling. All samples were dried, crushed, and s milled to 75 percent passing 80 mesh.
	The sample preparation techniques meet industry standards and are considered appropriate for the mineralization being investigated.
	Industry standard procedures are employed, including ensuring non-core samples are adequately homogenized before. Archive samples are collected.
	No field duplicate samples or second half sampling was done. The target mineralization is quite homogeneous.
	Auger, reverse circulation and core sample sizes are adequate for the target mineralization sampled.

SECTION 1: SAMPLING TECHNIQUES AND DATA

Quality of Assay Data and Laboratory tests	For the first two drilling programs, sample preparation was completed at ALS Vespasiano's laboratory in Brazil using standard crushing and pulverization techniques; sample analysis was carried out by ALS Peru S.A. in Lima or ALS Minerals in North Vancouver, Canada. The prepared pulps were fused with lithium metaborate and analyzed by XRF spectroscopy for major oxide elements (P2O5, Al2O3, CaO, Fe2O3, K2O, MgO, MnO2, SiO2, and TiO2 (Method code XRF12pt/XRF24). Samples were also analyzed for a suite of 31 elements using an aqua regia digestion and inductively coupled plasma - mass spectrometry (Method code ME-MS81). For the second two drilling programs sample preparation and analysis was completed at SGS Geosol laboratory in Vespasiano, Brazil using standard crushing and pulverization techniques. The prepared pulps were fused with lithium metaborate and analyzed by XRF spectroscopy for major oxide elements (P2O5, Al2O3, CaO, Fe2O3, K2O, MgO, MnO, SiO2, and TiO2, - Method code XRF79C). They were also analysed for loss on ignition for calcination (method code PHY01E). Umpire testing was performed at ALS Chemex laboratory in Lima, Peru, where samples were analyzed for a suite of nine elements. The preparation and analytical procedures are appropriate for the type of mineralization sampled and are reliable to deliver the total content of the analyzed compounds.
	Not applicable.
Quality of Assay Data and Laboratory Tests	During the first and second drilling programs, control samples were inserted approximately every 12 samples; analyses of replicate pulp assays of mineralized rock were also completed. In addition, umpire laboratory testing was performed on approximately 5% of the samples. At ALS Minerals, North Vancouver, Canada, second pulp splits were analyzed for a suite of 31 elements including rare earth and trace elements, by inductively coupled plasma mass spectroscopy (Method code ME-MS81). Ten blank samples were sent for preparation to ALS laboratory in Vespasiano, Brazil and for analysis to ALS Minerals in Lima, Peru. Aguia used two certified phosphate reference materials (standards) sourced from Geostats Pty Ltd. (Geostats) in Perth, Australia. Umpire check assays were conducted by SGS Geosol in Belo Horizonte, MG, Brazil using XRF spectroscopy (Method codes XRF79C and PHY01E). Additionally, Aguia relied on the analytical quality control measured implemented by the ISO accredited laboratory used. During the third and fourth drilling programs, Aguia used two certified standard reference materials (standards), supplied by the Instituto de Tecnologia Austust Kekulé (ITAK). ITAK 911 is a high grade standard, while ITAK 910 is a mid-grade standard. The standards were prepared by ITAK for Aguia from mineralized material sourced from Aguia's Três Estradas project. The standards were certified using a standard round-robin testing protocol. The control samples are considered appropriate to the grade and style of mineralization being tested. In addition, fine and coarse blank samples were prepared from barren quartz veins. One company supplied control sample and a pulp duplicate were included in each batch of 48 samples. One batch of 48 samples was sent monthly for umpire laboratory testing.

	Umpire testing was performed at ALS Chemex laboratory in Lima, Peru, where samples were analyzed for a suite of elements (method code XRF12pt/XRF24). In addition, Aguia relied on the analytical quality control measured implemented by the ISO accredited laboratories used for analysis.
Verification of Sampling and Assaying	During a site visit on March 17 to 19, 2016, Millcreek personnel performed a detail audit of 13 core holes, reviewing measurements and descriptions of original logs to the core.
	No twin boreholes were completed.
	All core was logged by Aguia geologists; data were entered digitally into a comprehensive database program. Electronic data were verified by Millcreek.
	Assay data were not adjusted.
Location of Data Points	All borehole collars were surveyed according to the local UTM coordinate system (South American Datum 1969 – SAD69, Zone 21S), using differential GPS equipment before drilling started, and once drilling had been completed.
	UTM system (Zone 21S), South American Datum 1969.
	A topographic survey of the project area was completed using differential GPS technology. The survey comprised 35.35 line kilometers, consisting of survey lines spaced 25 meters apart, and control lines spaced 100 meters apart The topographic survey generated contour lines at 1-meter intervals in the meta-carbonatite area. Contour lines at 5-meter intervals were obtained for the remaining area using shuttle radar topography mission (SRTM) and orthorectified Geoeye images with 0.5 meter resolution.
Data Spacing and Distribution	On the north tenement (DNPM#810.090/1991), reverse circulation drilling was completed on sections spaced 50 meters apart and core drilling has an approximate spacing of 75 meters. On the south tenement (DNPM#810.325/2012), reverse circulation drilling has a spacing of 250 X 50 meters, such that there are two holes on the outer bounds of each section. Core holes on the south tenement have an approximate spacing of 150 meters. There is no drilling on DNPM#810.998/2011.
	The boreholes are spaced sufficiently close to interpret the boundaries of the phosphate mineralization with a confidence sufficient to establish continuity and support classification for Measured, Indicated and Inferred categories.
	Assay data were composited to one meter length prior to resource estimation.
Orientation of Data in Relation to Geologic Structure	The sampling patterns used did not introduce an apparent sampling bias.
	The sampling patterns used did not introduce an apparent sampling bias.
Sample Security	Chain of custody of all sample material was maintained by Aguia. Samples were stored in secured facility in Lavras do Sul until dispatch to the preparation laboratory by commercial carrier.
Audits or Reviews	Millcreek audited the project in early 2016 and concluded that exploration work completed by Aguia used procedures consistent with generally accepted industry best practices. The audit found no issues with the project data.

SECTION 2: REPORTING OF EXPLORATION RESULTS

Mineral Tenement and Land Tenure Status	Permit 810.090/91, irrevocable right to 100% under an exercised option agreement with Companhia Brasiliera do Cobre (CBC). On July 1, 2011, CBC and Aguia Metais Ltda., a subsidiary of Aguia in Brazil, executed an option agreement providing the irrevocable purchase option of these mineral rights by Aguia Metais (or its affiliate or subsidiaries). On May 30, 2012 Aguia Metais exercised the purchase option concerning these mineral rights by means of its affiliate Aguia Fertilizantes S/A (Aguia Fertilizantes). On July 10, 2012, CBC and Aguia Fertilizantes executed an irrevocable agreement providing the assignment of these mineral rights to Aguia Fertilizantes. On July 20, 2012 CBC filed a request before the DNPM applying for the

	transfer of these mineral rights to Aguia Fertilizantes. The 2nd two year term expired on August 16, 2012, with the Final Exploration Report now under review by the Government, approval of which will allow the Company a further year (from the date of approval) to submit an Economic Exploitation Plan. Permit 810.325/12, irrevocable right to 100% under an exercised option agreement with Companhia Brasiliera de Cobre. Granted April 29, 2013, initial 3 year term expiry April 29, 2016. Titleholder has presented a Partial Exploration Report and has submitted a request for renewal of the exploration for another three years.
Exploration Done by Other Parties	Phosphate rich rocks at Três Estradas were discovered during a gold exploration program under a joint venture agreement between Companhia Brasileira do Cobre and Santa Elina in 2007/2008. Exploration activities comprised an integrated geochemical/geological/ geophysical and drilling program. The gold results were disappointing, causing Santa Elina to withdraw from the joint venture; however, P2O5 values in excess of 6% were noted in assays of soils and drill core.
Geology	The Três Estradas phosphate project is a carbonatite complex containing apatite as the phosphate bearing mineral in both meta-carbonatite and meta-amphibolite. The carbonatite complex strikes northeast and dips steeply to subvertically to the southwest. Rocks in the area have been affected by Neo-Proterozoic shearing and metamorphism. The carbonatite and its host rocks are part of the Santa Maria Chico Granulite Complex, within the Taquarembó Domain of the Achaean to Proterozoic Sul-rio-grandense Shield.
Drill Hole Information	Mineral resources are informed from 78 core boreholes (10,801.45 meters) and 154 reverse circulation boreholes (3,304 meters), completed in 2011, 2012, 2014 and 2015. Information from auger boreholes was not considered for resource estimation. Boreholes generally were completed on sections 50 meters apart. Borehole spacing along section in the north tenement (DNPM#810.090/1991) is typically 50 meters and in the south tenement (DNPM#810.325/2012) is typically 80 meters. The complete dataset was used in the estimate. The large dataset precludes listing of individual results as would be the case for limited data when reporting Exploration Results.
Data Aggregation Methods	No exploration data were altered. Sample intervals were length weighted. A nominal 3 percent P2O5 lower cutoff was used.
	Not applicable.
	Not applicable.
Relationship Between Mineralization Widths and Intercept Lengths	Reverse circulation drilling was designed to intercept the flat lying upper oxide mineralization, and was occasionally terminated once fresh rock was intercepted at depth. Core drilling was designed to intersect the full width of the target apatite mineralization at a high angle.
	Reverse circulation drilling was typically oriented perpendicular to the sub-horizontal oxide layer, and therefore downhole lengths generally approximate true widths. Core drilling was performed at an acute angle to the steeply to vertically dipping carbonatite bodies, hence downhole widths were greater than true widths. For boreholes drilled with a dip of 60 degrees, true mineralization widths were generally in the order of 40 to 60 percent of downhole intersection lengths.
	Down hole lengths were reported. Relationships between true lengths and true thickness are shown in cross sections within the report.
Diagrams	Borehole collar map and representative sections included in Appendix B
Balanced Reporting	All relevant drilling information was incorporated in the preparation of the mineral resource estimate.
Other Substantive Exploration Data	None

Further Work	Future work on Três Estradas will likely advance to Prefeasibility or Feasibility levels of study to advance the project towards development. Future work will likely include additional infill drilling to increase geologic assurance along with detailed mine planning, processing design, infrastructure, environmental planning, and project economics.

SECTION 3: ESTIMATION AND REPORTING OF MINERAL RESOURCES

Database Integrity	The database was provided to Millcreek in a digital format. Millcreek conducted a series of routine verifications to ensure the reliability of the electronic data provided by Aguia. Rare and minor input errors were detected in the Aguia database. These errors are considered not material.
Site Visits	A site visit was undertaken by Mr. Steven B. Kerr and Mr. Alister D. Horn on March 16 to 18, 2016. Both gentlemen are principal consultants with Millcreek Mining Group and are appropriate independent Competent Persons for the purpose of JORC. Millcreek was given full access to the project site, relevant data, and Aguia's field offices in Lavras do Sul. Millcreek was afforded full access to Aguia personnel and had in-depth conversations and meetings relating to past exploration work, procedures followed in data acquisition, and future goals in project development.
Geologic Interpretation	Following our audit Millcreek has determined Aguia's geological and mineralization model used for the mineral resource estimation is adequate to support geological modelling and evaluation and classification of mineral resources pursuant to the JORC 2012 Code. Aguia used a lithological-assay based approach to define the boundaries of the phosphate (apatite) mineralization and the following criteria: Minimum average grade of composite interval (hanging wall to footwall contact) is 3.0% P2O5 for saprolite and fresh rock. Three weathering zones (saprolite, weathered, and fresh rock) defined by two weathering surfaces have been modelled according to core logging data. Maximum length of internal dilution within a mineralized interval is 4.0 meters. There are eight intervals (1.7% of internal dilution intervals) that are longer than 4 meters.
Dimensions	The minimum and maximum extents of the mineral resource are given below: (| | Minimum* | Maximum* |) Easting: 765,560 / 767,140 Northing: 6,576,910 / 6,579,810 Elevation: -100 / 400 *SAD 69 Zone 21S
Estimation and Modelling Techniques	Five estimation domains were modelled, defined by rock type and weathering: Two in carbonatite, one in amphibolite, and two in the saprolite rock. Aguia used Geovia's GEMS software to model geology and estimate grades into a 3D block model, constrained by mineralization wireframes. Aguia composited all assay intervals to a length of 1.0 meter. No capping was used. Variography was undertaken on 1-meter composites for P_2O_5, CaO, Fe_2O_3 and MgO in the meta-carbonatite and amphibolite domains. See report for table of results. Millcreek considers that Aguia's calculation parameters, orientation, and fitted variogram models are appropriate and reasonable given the available data and geological interpretation. P_2O_5, CaO, Fe_2O_3, SiO_2, Al_2O_3 and MgO were estimated into the block model using ordinary kriging within the fresh and weathered meta-carbonatite and meta-amphibolite. Inverse distance squared (ID2) was used for saprolite rock. For all elements, For all elements, three estimations passes were used with progressively relaxed search ellipsoids

	and data requirements. The estimation ellipse ranges and orientations are based on the variogram model for P_2O_5 in the meta-carbonatite. The block size of 25m (along strike) by 5m (perpendicular to strike) by 10m (vertical) used is appropriate for the density of data and the search radii used to interpolate grade into the model. Millcreek's audit of the methodology and parameters considered by Aguia found that there is minimal sensitivity to changes in estimation parameters. Millcreek investigated grade capping and found grade capping is immaterial to the overall average grade of the deposit. Millcreek performed a visual validation of the block model by comparing block and borehole grades on a section by section basis. The resultant block estimates appear to be reasonable given the informing composite grades and estimation parameters. Millcreek also performed a series of swath plots to compare kriging estimation to ID2 and nearest neighbor searches and reasonable conformance.
Moisture	All tonnage estimates in the model have been presented on a dry basis.
Cut-Off Parameters	The mineral resources are reported within a conceptual pit shell at a cut-off grade of 3.00% of P_2O_5 which takes into account extraction scenarios and processing recovery.
Mining Factors and Assumptions	The following assumptions were considered for Conceptual Open Pit Optimization to assist with the preparation of the mineral resource statement: (see table below)
Metallurgical Factors and Assumptions	Metallurgical testwork for Três Estradas has been completed on a number of samples of different mineralization types. Testwork included grinding, magnetic separation, cell flotation, and column flotation. Two main mineralization types tested were Oxide/Saprolite and Fresh Carbonatite. Column flotation results performed by Eriez yielded the best results. Column flotation testwork on the oxide/saprolite material demonstrated that a rougher column alone is capable of providing a concentrate grade of 31.1% P2O5 with a P2O5 recovery of 80.1%. However, it is recommended to add a cleaner stage to increase recovery of rougher flotation at a lower P2O5 content. For Fresh Carbonatite a flowsheet has been developed that includes rougher flotation followed by two stages of cleaning. The second cleaner tailing is returned to the first cleaner feed. The second cleaner overflow is final concentrate. The first cleaner

Parameters	Value
Mining Recovery/Mining Dilution	100 / 0
Process Recovery P2O5 Saprolite	80%
Process Recovery P205 Fresh	84%
Process Recovery Calcite Fresh	72%
Concentrate Grade Saprolite	31.0%
Process Recovery Saprolite	30.2%
Overall Pit Slope Angle Saprolite/Fresh Rock	35 / 50 Degrees
Mining Cost (US$/tonne Mined)	1.34
Process Cost (US$/tonne ROM)	4.79
G&A (US$/tonne of ROM)	0.82
Calcite Production Cost (US$/tonne of concentrate)	7.3
Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)	$250
Selling Price (US$/tonne of concentrate at Calcite)	$47
Royalties - Gross	2%
CFEM Tax - Gross	2%
Marketing Costs - Gross	2%
Exchange Rate (US$ to R$	3.8

	underflow flows to a scavenger column cell. The scavenger overflow returns to the rougher column feed, while the scavenger underflow, along with the rougher column underflow reports to final tailings. A rougher-cleaner-cleaner configuration yields a concentrate grade of 30.25% P2O5 at a recovery of 84.6%. Testing also showed that calcite can be recovered from the Fresh Rock rougher tails following staged magnetic separation yielding 50.3% CaO (89.78% calcite) at a recovery of 71.1%. Conceptual operating and capital costs have been benchmarked to similar phosphate operations.
Environmental Factors and Assumptions	An internal Environmental Assessment study was carried out by WALM Engenharia e Tecnologia Ambiental Ltda (qualified local Brazilian consultants) to assess various aspects of environment issues which are likely to impact a proposed mining project at the Três Estradas project. Millcreek has not studied environmental aspects of the project at the current project stage. Millcreek does not anticipate any significant environmental issues as this project advances towards development.
Bulk Density	Specific gravity was measured by Aguia on uncoated core samples using a standard weight in water/weight in air methodology. The specific gravity database contains 3,045 measurements. Aguia calculated and assigned weighted averages of specific gravity to each of the five mineralized domains relevant to resource estimation. Measurements were performed on core samples air-dried between extraction and measurement.
Classification	Measured: Blocks estimated in the first pass using half the distance of variogram range and based on composites from a minimum of three boreholes; Indicated: Blocks estimated in the first two passes within the full range of the variogram and based on composites from a minimum of two boreholes; and Inferred: All remaining blocks within the wireframe limits in an unconfined search not classified in the first two estimation passes. In all three passes, the maximum number of composites per drill hole is unconstrained.
Audits and Reviews	Millcreek completed a detailed audit of the mineral resource model completed by Aguia and are summarized in the accompanying report. Millcreek completed a separate estimate in MineSight following the parameters used by Aguia. Our own resource estimate was within 1.5% of Aguia's estimate. Grade estimation parameters were tested by tested by systematically removing drilling data from the model and evaluating the interpolated values with the posted values for drill holes removed from the model. The largest difference observed between posted and interpolated values was 0.8% resulting in a 0.1% difference for an estimation run The block model was evaluated using a series of swath plots comparing ordinary kriging to nearest neighbor searches and estimation through ID2.
Discussion of Relative Accuracy/ Confidence	Millcreek is satisfied that the geological modelling adequately represents the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource evaluation. Mineral resources were classified as Measured, Indicated or Inferred. Currently only 1% of the resources are currently classified as measured while 80% of the resource is classified as an inferred resource. A substantial increase in infill drilling is required in forthcoming work to bring a majority of the resources into measured and indicated categories.

SECTION 4: ESTIMATION AND REPORTING OF ORE RESERVES

There are no Ore Reserves to report at this time

SECTION 5: ESTIMATION AND REPORTING OF DIAMONDS AND OTHER GEMSTONES

Not Applicable

JOCA TAVARES JORC TABLE 1

SECTION 1: SAMPLING TECHNIQUES AND DATA

Sampling Techniques	Soil samples were collected from a 200 X 25 meter grid oriented over the south-central portion of the exploration permit and completely covers the carbonatite and kimberlite breccias outcropping southwest of the carbonatite. A total of 457 soil samples were collected. All soil samples targeted the B Horizon soil profile. 111 rock samples were collected from within the exploration permit. Smpling was done on a variety of lithologies. Drilling comprised 40 core boreholes (2,305.90 meters) and 89 auger boreholes (359.65 meters). Auger - Drilling was completed up to a depth of 15 meters within the saprolite unit.
	Auger - borehole collars were surveyed according to the local UTM coordinate system (SAD 69, Zone 22S) using a handheld GPS receiver before drilling started. No downhole surveys were performed. Auger data were not used for resource estimation purposes. Core Drilling - All borehole collars were surveyed according to the local UTM coordinate system (SAD 69, Zone 22S), using a differential GPS receiver before drilling started, and once drilling had been completed. 29 core holes were drilled vertically (-90°). Eleven holes holes were drilled at various azimuth bearings inclined at dips ranging from -50° to -70°. Maxibore surveys were completed for seven of the inclined holes.
	Auger - 1 meter samples collected, 2 kilograms of material collected for each field sample. Samples were taken at 1-meter intervals. These samples were analyzed for phosphorus, calcium, and aluminium content with a portable x-ray fluorescence (XRF) analyzer. If any sample yielded greater than 1.31 % phosphorus (3% P2O5), all samples from that auger borehole were shipped to the laboratory for assaying. Core Drilling - The majority of sample intervals range between 0.5 and 1.5 meters, averaging 1.0 meter and honour geological contacts. Samples consisted of half core and were collected fromcore cut lengthwise using a diamond saw. Three readings per meter were performed with a portable XRF device. Samples were prepared and analyzed at SGS Geosol laboratories in Vespasiano, Brazil
Drilling Techniques	Auger - tipper scarifier motorized augers were used to drill the auger boreholes.
	Core Drilling - Drilling utilized HQ equipment for weathered material and NQ for fresh rock. Down hole surveys were not performed on 19 core boreholes completed during the first drilling program. Downhole surveys were performed on 3-meter intervals using a Maxibore down-hole tool on all boreholes completed during the second, third, and fourth drilling program. No core orientation has been carried

SECTION 1: SAMPLING TECHNIQUES AND DATA

Drill Sample Recovery	Auger - Auger recovery was not monitored. Core Drilling - Recovery by sample and by drill run was recorded; core recovery exceeded 90 percent in 90 percent of all core borehole samples.
	Core Drilling - Detailed geological logs in appropriate logging form were completed. All core has been photographed dry before sampling.
	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
Logging	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
	There is no detectable relationship between sample recovery and grade in all samples collected (auger, reverse circulation and core).
	All of the relevant intersections were logged.
Sub-Sampling Techniques and Sample Preparation	Core was sawn in half, with one half sent for assaying and one half being retained for reference. Friable core was split down the centerline using a spatula or similar tool, with half being retained and half sent for assaying.
	Auger - One meter auger samples were placed on a plastic sheet; large pieces were broken down manually. The sample was then homogenized by shaking the sheet with a rolling motion. All samples were dried, crushed, and s milled to 75 percent passing 80 mesh.
	The sample preparation techniques meet industry standards and are considered appropriate for the mineralization being investigated.
	Industry standard procedures are employed, including ensuring non-core samples are adequately homogenized before. Archive samples are collected.
	No field duplicate samples or second half sampling was done. The target mineralization is quite homogeneous.
	Auger and core sample sizes are adequate for the target mineralization sampled.

SECTION 1: SAMPLING TECHNIQUES AND DATA

Quality of Assay Data and Laboratory tests	Sample preparation and analysis was completed at SGS Geosol laboratory in Vespasiano, Brazil using standard crushing and pulverization techniques. The prepared pulps were fused with lithium metaborate and analyzed by XRF spectroscopy for major oxide elements (P2O5, Al2O3, CaO, Fe2O3, K2O, MgO, MnO, SiO2, and TiO2, - Method code XRF79C). They were also analysed for loss on ignition for calcination (method code PHY01E). Umpire testing was performed at ALS Chemex laboratory in Lima, Peru, where samples were analyzed for a suite of nine elements. The preparation and analytical procedures are appropriate for the type of mineralization sampled and are reliable to deliver the total content of the analyzed compounds.
	Not applicable.
Quality of Assay Data and Laboratory Tests	Aguia used two certified standard reference materials (standards), supplied by the Instituto de Tecnologia Austust Kekulé (ITAK). ITAK 911 is a high grade standard, while ITAK 910 is a mid-grade standard. The standards were prepared by ITAK for Aguia from mineralized material sourced from Aguia's Três Estradas project. The standards were certified using a standard round-robin testing protocol. The control samples are considered appropriate to the grade and style of mineralization being tested. In addition, fine and coarse blank samples were prepared from barren quartz veins. One company supplied control sample and a pulp duplicate were included in each batch of 48 samples. One batch of 48 samples was sent monthly for umpire laboratory testing. Umpire testing was performed at ALS Chemex laboratory in Lima, Peru, where samples were analyzed for a suite of elements (method code XRF12pt/XRF24). In addition, Aguia relied on the analytical quality control measured implemented by the ISO accredited laboratories used for analysis.
Verification of Sampling and Assaying	During a site visit on March 17 to 19, 2016, Millcreek personnel performed a detail audit of 13 core holes, reviewing measurements and descriptions of original logs to the core.
	No twin boreholes were completed.
	All core was logged by Aguia geologists; data were entered digitally into a comprehensive database program. Electronic data were verified by Millcreek.
	Assay data were not adjusted.
Location of Data Points	All borehole collars were surveyed according to the local UTM coordinate system (South American Datum 1969 – SAD69, Zone 22S), using differential GPS equipment before drilling started, and once drilling had been completed.
	UTM system (Zone 22S), South American Datum 1969.
	A topographic survey of the project area was completed using differential GPS technology. The survey comprised 35.35 line kilometers, consisting of survey lines spaced 25 meters apart, and control lines spaced 100 meters apart The topographic survey generated contour lines at 1-meter intervals in the meta-carbonatite area. Contour lines at 5-meter intervals were obtained for the remaining area using shuttle radar topography mission (SRTM) and orthorectified Geoeye images with 0.5 meter resolution.
Data Spacing and Distribution	Core holes are spaced at an approximate 50 X 50 meter grid spacing. Auger holes were primarily oriented on north-south section lines spaced 100 meters apart. Spacing along the sections lines varied from 25 to 50 meters.
	The boreholes are spaced sufficiently close to interpret the boundaries of the phosphate mineralization with a confidence sufficient to establish continuity and support classification for Measured, Indicated and Inferred categories.
	Assay data were composited to one meter length prior to resource estimation.
Orientation of Data in	The sampling patterns used did not introduce an apparent sampling bias.

Relation to Geologic Structure	The sampling patterns used did not introduce an apparent sampling bias.
Sample Security	Chain of custody of all sample material was maintained by Aguia. Samples were stored in secured facility in Lavras do Sul until dispatch to the preparation laboratory by commercial carrier.
Audits or Reviews	Millcreek audited the project in early 2016 and concluded that exploration work completed by Aguia used procedures consistent with generally accepted industry best practices. The audit found no issues with the project data.

SECTION 2: REPORTING OF EXPLORATION RESULTS

Mineral Tenement and Land Tenure Status	The entire deposit is located within Permit 810.996/2010. Aguia has a 100% irrevocable right under an exercised option agreement with Companhia Brasiliera do Cobre (CBC). On July 1, 2011, CBC and Aguia Metais Ltda., a subsidiary of Aguia in Brazil, executed an option agreement providing the irrevocable purchase option of these mineral rights by Aguia Metais (or its affiliate or subsidiaries). On May 30, 2012 Aguia Metais exercised the purchase option concerning these mineral rights by means of its affiliate Aguia Fertilizantes S/A (Aguia Fertilizantes). On July 10, 2012, CBC and Aguia Fertilizantes executed an irrevocable agreement providing the assignment of these mineral rights to Aguia Fertilizantes. On July 20, 2012 CBC filed a request before the DNPM applying for the transfer of these mineral rights to Aguia Fertilizantes. Granted April 29, 2013, initial 3 year term expiry April 29, 2016. Titleholder has presented a Partial Exploration Report and has submitted a request for renewal of the exploration for another three years.
Exploration Done by Other Parties	All exploration work has been completed by Aguia.
Geology	The Joca Tavares phosphate project is a carbonatite intrusion containing apatite as the phosphate bearing mineral. The carbonatite along with Kimberlite breccias have intruded along a N40 - 50° trending lineament. The carbonatite is developed on the northeast end of the magnetic anomaly with the Kimberlite breccias extending southwest from the carbonatite. The carbonatite is in direct contact with siltstones and sandstones of the Arroio-Marmeliero Formation without signs of significant contact metamorphism
Drill Hole Information	Mineral resources are informed from 36 core boreholes (1,922.50 meters) completed between Oct. – Dec., 2015. Four core holes were used to test other potential targets within the exploration permit. Information from auger boreholes was not considered for resource estimation. Boreholes generally were completed on sections 50 meters apart. Drill hole information is included in table format within the report appendices detailing drill holes, meters and samples taken.
Data Aggregation Methods	No exploration data were altered. Sample intervals were length weighted. A nominal 3 percent P2O5 lower cutoff was used.
	Not applicable.
	Not applicable.
Relationship Between Mineralization Widths	Core drilling was designed to intersect the full width of the target apatite mineralization at a high angle.
	11 Core holes were drilled at inclined angles, hence downhole widths can be greater than true widths. For boreholes drilled with a dip of 60 degrees, true mineralization widths were

and Intercept Lengths	generally in the order of 40 to 60 percent of downhole intersection lengths. Down hole lengths were reported. Relationships between true lengths and true thickness are shown in cross sections within the report.
Diagrams	Drill hole collar map and representative sections included within the report
Balanced Reporting	All relevant drilling information was incorporated in the preparation of the mineral resource estimate.
Other Substantive Exploration Data	None
Further Work	Future work on Joca Tavaress will likely advance to Prefeasibility or Feasibility levels of study to advance the project towards development. Future work will likely include additional infill drilling to increase geologic assurance along with detailed mine planning, processing design, infrastructure, environmental planning, and project economics.

Section 3: Estimation and Reporting of Mineral Resources

Database Integrity	The database was provided to Millcreek in a digital format. Millcreek conducted a series of routine verifications to ensure the reliability of the electronic data provided by Aguia. No input errors were detected in the Aguia database.
Site Visits	A site visit was undertaken by Mr. Steven B. Kerr and Mr. Alister D. Horn on March 16 to 18, 2016. Both gentlemen are principal consultants with Millcreek Mining Group and are appropriate independent Competent Persons for the purpose of JORC. Millcreek was given full access to the project site, relevant data, and Aguia's field offices in Lavras do Sul. Millcreek was afforded full access to Aguia personnel and had in-depth conversations and meetings relating to past exploration work, procedures followed in data acquisition, and future goals in project development.
Geologic Interpretation	Following our audit Millcreek has determined Aguia's geological and mineralization model used for the mineral resource estimation is adequate to support geological modelling and evaluation and classification of mineral resources pursuant to the JORC 2012 Code. Aguia used a lithological-assay based approach to define the boundaries of the phosphate (apatite) mineralization and the following criteria: Minimum average grade of composite interval (hanging wall to footwall contact) is 3.0% P2O5 for saprolite and fresh rock.
Dimensions	The minimum and maximum extents of the mineral resource are given below: (see table below) *SAD 69 Zone 22S
Estimation and Modelling Techniques	Two mineralized estimation domains were modelled, Carbonatite and Saprolite. Aguia used Geovia's GEMS software to model geology and estimate grades into a 3D block model, constrained by mineralization wireframes. Aguia composited all assay intervals to a length of 1.0 meter. No capping was used. Variography was undertaken on 1 meter composites for P_2O_5, CaO, Fe_2O_3 and MgO in the two mineralized domains. See report for table of results. Millcreek considers that Aguia's calculation parameters, orientation, and fitted variogram models are appropriate and reasonable given the available data and geological interpretation. P_2O_5, CaO, Fe_2O_3, SiO_2, Al_2O_3 and MgO were estimated into the block model using ordinary kriging for the carbonatite. Inverse distance squared (ID2) was used for the saprolite rock. For all elements, four estimations passes were used with progressively

	Minimum*	Maximum*
Easting	234,010	234,480
Northing	6,656,640	6,566,970
Elevation	193.75	288.75

<table>
<tr><td></td><td>relaxed search ellipsoids and data requirements. The estimation ellipse ranges and orientations are based on the variogram model for P2O5 in the carbonatite.

The block size of 10 m E by 10 m N by 2.5m (vertical) used is appropriate for the density of data and the search radii used to interpolate grade into the model.

Millcreek’s audit of the methodology and parameters considered by Aguia found that there is minimal sensitivity to changes in estimation parameters.

Millcreek investigated grade capping and found grade capping is immaterial to the overall average grade of the deposit.

Millcreek performed a visual validation of the block model by comparing block and borehole grades on a section by section basis. The resultant block estimates appear to be reasonable given the informing composite grades and estimation parameters. Millcreek also performed a series of swath plots to compare kriging estimation to ID2 and nearest neighbor searches and reasonable conformance.</td></tr>
<tr><td>Moisture</td><td>All tonnage estimates in the model have been presented on a dry basis.</td></tr>
<tr><td>Cut-Off Parameters</td><td>The mineral resources are reported within a conceptual pit shell at a cut-off grade of 3.00% of P2O5 which takes into account extraction scenarios and processing recovery.</td></tr>
<tr><td>Mining Factors and Assumptions</td><td>The following assumptions were considered for Conceptual Open Pit Optimization to assist with the preparation of the mineral resource statement:

<table>
<tr><th>Parameters</th><th>Value</th></tr>
<tr><td>Mining Recovery/Mining Dilution</td><td>100 / 0</td></tr>
<tr><td>Process Recovery P2O5 Saprolite</td><td>80%</td></tr>
<tr><td>Process Recovery P205 Fresh</td><td>84%</td></tr>
<tr><td>Concentrate Grade Saprolite</td><td>31.0%</td></tr>
<tr><td>Process Recovery Saprolite</td><td>30.2%</td></tr>
<tr><td>Overall Pit Slope Angle Saprolite/Fresh Rock</td><td>45 / 45 Degrees</td></tr>
<tr><td>Mining Cost (US$/tonne Mined)</td><td>1.34</td></tr>
<tr><td>Process Cost (US$/tonne ROM)</td><td>4.79</td></tr>
<tr><td>G&A (US$/tonne of ROM)</td><td>0.82</td></tr>
<tr><td>Hauling Cost of ROM to TE (85km @ R$ 0.20 / tkm)</td><td>$4.47</td></tr>
<tr><td>Selling Price (US$/tonne of concentrate at 30.2% P_2O_5)</td><td>$250</td></tr>
<tr><td>Royalties - Gross</td><td>2%</td></tr>
<tr><td>CFEM Tax - Gross</td><td>2%</td></tr>
<tr><td>Marketing Costs - Gross</td><td>2%</td></tr>
<tr><td>Exchange Rate (US$ to R$</td><td>3.8</td></tr>
</table></td></tr>
<tr><td>Metallurgical Factors and Assumptions</td><td>Rock mined from Joca Tavares will likely be shipped to Três Estradas for mineral processing. Metallurgical testwork for Três Estradas has been completed on a number of samples of different mineralization types. Testwork included grinding, magnetic separation, cell flotation, and column flotation. Two main mineralization types tested were Oxide/Saprolite and Fresh Carbonatite. Column flotation results performed by Eriez yielded the best results.

Column flotation testwork on the oxide/saprolite material demonstrated that a rougher column alone is capable of providing a concentrate grade of 31.1% P2O5 with a P2O5 recovery of 80.1%. However, it is recommended to add a cleaner stage to increase recovery of rougher flotation at a lower P2O5 content.

For Fresh Carbonatite a flowsheet has been developed that includes rougher flotation followed by two stages of cleaning. The second cleaner tailing is returned to the first cleaner feed. The second cleaner overflow is final concentrate. The first cleaner underflow flows to a scavenger column cell. The scavenger overflow returns to the rougher column feed, while the scavenger underflow, along with the rougher column</td></tr>
</table>

	underflow reports to final tailings. A rougher-cleaner-cleaner configuration yields a concentrate grade of 30.25% P2O5 at a recovery of 84.6%. Testing also showed that calcite can be recovered from the Fresh Rock rougher tails following staged magnetic separation yielding 50.3% CaO (89.78% calcite) at a recovery of 71.1%. The carbonatite at Joca Tavares is primarily dolomitic. No testing has been completed on recovering dolomite as a byproduct. Conceptual operating and capital costs have been benchmarked to similar phosphate operations.
Environmental Factors and Assumptions	An internal Environmental Assessment study was carried out by WALM Engenharia e Tecnologia Ambiental Ltda (qualified local Brazilian consultants) to assess various aspects of environment issues which are likely to impact a proposed mining project at the Três Estradas project where mineral processing will occur. No environmental assessments have been completed for mining at Joca Tavares. Millcreek has not studied environmental aspects of the project at the current project stage. Millcreek does not anticipate any significant environmental issues as this project advances towards development.
Bulk Density	Specific gravity was measured by Aguia on uncoated core samples using a standard weight in water/weight in air methodology. The specific gravity database contains 609 measurements. Aguia calculated and assigned weighted averages of specific gravity to both of the two mineralized domains relevant to resource estimation. Measurements were performed on core samples air-dried between extraction and measurement.
Classification	Measured: Blocks estimated in the first pass using 30% of the distance of variogram range and based on composites from a minimum of three boreholes; Indicated: Blocks estimated in the first two passes within 50% of the distance of the variogram range and based on composites from a minimum of two boreholes; and Inferred: All remaining blocks within the wireframe limits not classified in the first two estimation passes using the full range of distance in the variogram range for CBT and two times the variogram range in a fourth pass for CBTSAP. The quantity and grade estimates meet certain economic thresholds, and that the mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recoveries. Block model quantities and grade estimates for the Três Estradas phosphate project were classified according to the JORC Code by Mr. Steven B. Kerr (AIPG CPG-10352), an appropriate Competent Person for the purpose of JORC.
Audits and Reviews	Millcreek completed a detailed audit of the mineral resource model completed by Aguia and are summarized in the accompanying report. Millcreek completed a separate estimate in MineSight following the parameters used by Aguia. Our own resource estimate was within 4% of Aguia's estimate. Grade estimation parameters were tested by tested by systematically removing drilling data from the model and evaluating the interpolated values with the posted values for drill holes removed from the model. The block model was evaluated using a series of swath plots comparing ordinary kriging to nearest neighbor searches and estimation through ID2.
Discussion of Relative Accuracy/ Confidence	Millcreek is satisfied that the geological modelling adequately represents the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource evaluation. Mineral resources were classified as Measured, Indicated or Inferred.

SECTION 4: ESTIMATION AND REPORTING OF ORE RESERVES

There are no Ore Reserves to report at this time

SECTION 5: ESTIMATION AND REPORTING OF DIAMONDS AND OTHER GEMSTONES

Not Applicable

20 APPENDIX B: DRILLHOLE SUMMARIES

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TED-11-001	Core	767,854.52	6,577,465.33	351.15	41.55	150.00	(60.00)	9/13/2011	44
TED-11-002	Core	767,865.60	6,577,445.76	353.62	40.85	150.00	(60.00)	9/15/2011	44
TED-11-003	Core	767,706.08	6,577,323.28	358.24	40.65	150.00	(60.00)	9/17/2011	40
TED-11-004	Core	767,549.21	6,577,194.28	366.40	50.75	150.00	(60.00)	9/20/2011	52
TED-11-005	Core	767,408.02	6,577,035.03	356.90	43.25	150.00	(60.00)	9/22/2011	42
TED-11-006	Core	767,381.46	6,577,080.15	351.64	100.60	150.00	(60.00)	9/26/2011	102
TED-11-007	Core	767,525.14	6,577,235.22	362.17	71.95	150.00	(45.00)	9/29/2011	76
TED-11-008	Core	767,561.58	6,577,172.52	366.17	40.85	150.00	(45.00)	9/30/2011	41
TED-11-009	Core	767,498.35	6,577,280.85	356.50	71.10	150.00	(45.00)	10/4/2011	73
TED-11-010	Core	767,682.14	6,577,366.89	353.99	78.20	150.00	(45.00)	10/6/2011	79
TED-11-011	Core	767,657.71	6,577,409.87	350.45	101.05	150.00	(45.00)	10/11/2011	100
TED-11-012	Core	767,628.82	6,577,466.73	342.95	126.10	150.00	(45.00)	10/17/2011	121
TED-11-013	Core	767,832.05	6,577,506.19	348.68	80.75	150.00	(45.00)	10/20/2011	80
TED-11-014	Core	768,110.89	6,577,583.63	328.33	33.40	150.00	(45.00)	10/24/2011	34
TED-11-015	Core	768,085.25	6,577,626.78	334.49	94.40	150.00	(45.00)	10/28/2011	92
TED-11-016	Core	767,127.87	6,577,122.09	356.32	109.70	150.00	(45.00)	11/4/2011	109
TED-11-017	Core	767,084.62	6,577,040.81	350.41	41.10	150.00	(45.00)	11/7/2011	41
TED-11-018	Core	767,298.41	6,577,195.48	341.06	69.70	150.00	(45.00)	11/9/2011	70
TED-11-019	Core	768,128.25	6,577,554.84	325.77	81.20	330.00	(60.00)	11/12/2011	82
TED-12-020	Core	767,105.00	6,577,176.42	351.04	205.55	150.00	(55.00)	7/27/2012	171
TED-12-021	Core	767,052.19	6,577,110.13	347.11	229.50	150.00	(75.00)	8/6/2012	175
TED-12-022	Core	767,229.11	6,577,157.18	352.96	343.00	150.00	(65.00)	8/17/2012	341
TED-12-023	Core	767,632.58	6,577,262.27	361.70	69.65	150.00	(65.00)	8/17/2012	63
TED-12-024	Core	767,452.40	6,577,173.35	361.12	113.75	150.00	(55.00)	8/21/2012	120
TED-12-025	Core	767,605.84	6,577,308.25	357.50	103.70	150.00	(65.00)	8/21/2012	110
TED-12-026	Core	767,511.69	6,577,258.24	359.32	156.00	150.00	(55.00)	8/24/2012	143
TED-12-027	Core	767,558.13	6,577,390.30	345.59	248.65	150.00	(65.00)	8/28/2012	216
TED-12-028	Core	767,474.37	6,577,321.88	355.08	219.80	150.00	(55.00)	9/1/2012	217
TED-12-029	Core	767,407.42	6,577,250.62	352.54	206.15	150.00	(55.00)	9/6/2012	201
TED-12-030	Core	767,364.78	6,577,322.78	353.74	319.10	150.00	(55.00)	9/13/2012	212
TED-12-031	Core	767,651.66	6,577,420.88	349.47	185.20	150.00	(60.00)	9/11/2012	181
TED-12-032	Core	767,929.79	6,577,559.93	335.17	80.10	150.00	(60.00)	9/18/2012	71
TED-12-033	Core	767,760.80	6,577,436.20	352.82	102.80	150.00	(55.00)	9/15/2012	109
TED-12-034	Core	767,803.05	6,577,558.75	344.99	202.65	150.00	(60.00)	9/25/2012	72
TED-12-035	Core	767,898.89	6,577,602.47	346.87	181.85	150.00	(65.00)	9/26/2012	0
TED-12-036	Core	767,353.17	6,577,181.11	345.57	199.75	150.00	(60.00)	9/29/2012	205
TED-12-037	Core	767,725.02	6,577,499.91	348.83	172.20	150.00	(60.00)	10/1/2012	100
TED-12-038	Core	767,307.29	6,577,278.72	349.72	355.75	150.00	(60.00)	10/10/2012	303
TED-12-039	Core	767,895.93	6,577,411.03	344.27	187.60	330.00	(55.00)	10/8/2012	138
TED-12-040	Core	768,002.97	6,577,601.83	329.84	134.00	150.00	(60.00)	10/16/2012	0
TED-14-041	Core	767,329.77	6,576,986.51	359.77	100.00	150.00	(60.00)	11/20/2014	95
TED-14-042	Core	767,250.66	6,576,924.25	363.10	93.60	150.00	(60.00)	11/22/2014	100
TED-14-043	Core	767,103.25	6,576,782.56	367.82	90.80	150.00	(50.00)	11/25/2014	101
TED-14-044	Core	766,935.18	6,576,672.75	362.82	190.10	150.00	(62.00)	11/29/2014	172
TED-14-045	Core	766,779.32	6,576,537.44	358.87	179.30	150.00	(60.00)	12/2/2014	144
TED-14-046	Core	766,642.10	6,576,378.80	353.01	117.80	150.00	(60.00)	12/5/2014	99
TED-14-047	Core	767,327.52	6,577,098.37	352.08	141.00	330.00	(60.00)	12/8/2014	143
TED-14-048	Core	766,960.38	6,577,026.13	344.48	70.25	150.00	(50.00)	12/9/2014	0
TED-14-049	Core	767,200.07	6,577,011.74	362.64	234.00	150.00	(60.00)	12/16/2014	198
TED-14-050	Core	767,123.21	6,576,894.61	365.71	191.25	150.00	(50.00)	12/16/2014	151
TED-14-051	Core	767,244.55	6,577,051.37	361.45	180.60	330.00	(60.00)	1/12/2015	130
TED-14-052	Core	766,985.40	6,576,782.76	363.95	233.45	150.00	(55.00)	1/12/2015	151
TED-15-053	Core	767,019.27	6,576,924.80	355.06	124.00	330.00	(60.00)	1/15/2015	128
TED-15-054	Core	766,422.39	6,576,377.34	330.65	118.65	330.00	(60.00)	1/15/2015	126
TED-15-055	Core	766,878.16	6,576,770.31	362.14	215.55	330.00	(70.00)	1/22/2015	209
TED-15-056	Core	766,348.69	6,576,269.44	329.09	165.55	330.00	(55.00)	1/21/2015	169
TED-15-057	Core	766,439.50	6,576,324.82	335.88	273.00	330.00	(60.00)	1/29/2015	273
TED-15-058	Core	766,706.77	6,576,667.83	346.90	226.50	330.00	(60.00)	1/29/2015	230
TED-15-059	Core	766,292.16	6,576,189.59	321.87	203.50	330.00	(60.00)	2/3/2015	178
TED-15-060	Core	766,569.77	6,576,509.65	344.26	124.00	330.00	(60.00)	2/2/2015	126
TED-15-061	Core	767,649.90	6,577,329.19	355.10	83.45	150.00	(60.00)	10/24/2015	91
TED-15-062	Core	767,566.52	6,577,282.66	359.22	106.00	150.00	(60.00)	10/28/2015	121
TED-15-063	Core	767,454.47	6,577,274.23	356.34	231.15	150.00	(60.00)	11/1/2015	220
TED-15-064	Core	767,703.39	6,577,437.82	352.28	120.15	150.00	(60.00)	11/4/2015	124
TED-15-065	Core	767,461.74	6,576,960.90	359.45	120.45	150.00	(60.00)	11/6/2015	42
TED-15-066	Core	767,880.97	6,577,526.27	340.28	76.00	150.00	(60.00)	11/6/2015	79

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TED-15-067	Core	767,288.65	6,576,952.35	361.92	136.50	150.00	(60.00)	11/11/2015	96
TED-15-068	Core	767,978.41	6,577,582.53	331.72	90.20	150.00	(60.00)	11/11/2015	49
TED-15-069	Core	767,794.50	6,577,485.53	351.06	138.70	150.00	(60.00)	11/16/2015	142
TED-15-070	Core	767,367.27	6,576,919.33	361.28	108.05	150.00	(60.00)	11/14/2015	103
TED-15-071	Core	767,400.60	6,577,164.97	353.34	139.15	150.00	(60.00)	11/19/2015	142
TED-15-072	Core	767,086.18	6,576,807.60	367.30	135.85	150.00	(60.00)	11/20/2015	131
TED-15-073	Core	766,785.27	6,576,826.38	352.24	82.50	150.00	(60.00)	11/21/2015	84
TED-15-074	Core	766,983.05	6,576,687.08	365.07	127.25	150.00	(60.00)	11/23/2015	122
TED-15-075	Core	766,613.76	6,576,633.49	341.99	112.00	150.00	(60.00)	11/23/2015	84
TED-15-076	Core	766,854.19	6,576,617.26	358.93	185.40	150.00	(60.00)	11/28/2015	134
TED-15-077	Core	766,457.10	6,576,510.15	331.55	101.70	150.00	(60.00)	11/26/2015	105
TED-15-078	Core	766,759.28	6,576,480.16	357.73	100.15	150.00	(60.00)	12/2/2015	99
TER-12-001	RC	768,149.35	6,577,677.02	321.21	13.00	-	(90.00)	9/1/2012	13
TER-12-002	RC	768,154.56	6,577,626.72	325.78	15.00	-	(90.00)	9/3/2012	15
TER-12-003	RC	768,190.41	6,577,596.32	326.04	12.00	-	(90.00)	9/3/2012	12
TER-12-004	RC	768,141.35	6,577,578.50	328.64	15.00	-	(90.00)	9/3/2012	15
TER-12-005	RC	768,105.71	6,577,548.51	323.53	10.00	-	(90.00)	9/3/2012	10
TER-12-006	RC	768,121.48	6,577,616.70	330.07	18.00	-	(90.00)	9/3/2012	18
TER-12-007	RC	768,085.03	6,577,580.14	326.59	15.00	-	(90.00)	9/3/2012	15
TER-12-008	RC	768,054.87	6,577,630.42	336.77	11.00	-	(90.00)	9/4/2012	11
TER-12-009	RC	768,098.45	6,577,656.23	332.32	15.00	-	(90.00)	9/4/2012	15
TER-12-010	RC	767,991.32	6,577,540.39	327.04	13.00	-	(90.00)	9/4/2012	13
TER-12-011	RC	768,014.89	6,577,495.37	325.44	13.00	-	(90.00)	9/5/2012	13
TER-12-012	RC	767,952.71	6,577,510.80	335.83	20.00	-	(90.00)	9/5/2012	20
TER-12-013	RC	767,931.51	6,577,445.14	342.37	21.00	-	(90.00)	9/5/2012	21
TER-12-014	RC	767,954.43	6,577,402.37	335.55	12.00	-	(90.00)	9/5/2012	12
TER-12-015	RC	767,777.12	6,577,412.88	353.28	30.00	-	(90.00)	9/7/2012	30
TER-12-016	RC	767,801.40	6,577,476.71	351.11	27.00	-	(90.00)	9/7/2012	27
TER-12-017	RC	767,819.56	6,577,437.39	353.37	33.00	-	(90.00)	9/7/2012	33
TER-12-018	RC	767,759.19	6,577,342.98	353.82	31.00	-	(90.00)	9/8/2012	31
TER-12-019	RC	767,752.02	6,577,456.54	352.17	18.00	-	(90.00)	9/8/2012	18
TER-12-020	RC	767,898.12	6,577,490.22	344.04	25.00	-	(90.00)	9/10/2012	25
TER-12-021	RC	767,879.67	6,577,529.17	340.55	15.00	-	(90.00)	9/10/2012	15
TER-12-022	RC	767,881.98	6,577,422.85	349.01	14.00	-	(90.00)	9/10/2012	14
TER-12-023	RC	767,801.79	6,577,370.45	352.43	18.00	-	(90.00)	9/10/2012	18
TER-12-024	RC	767,708.10	6,577,429.78	352.26	21.00	-	(90.00)	9/10/2012	21
TER-12-025	RC	767,734.23	6,577,388.37	354.15	26.00	-	(90.00)	9/10/2012	26
TER-12-026	RC	767,622.96	6,577,384.82	347.98	15.00	-	(90.00)	9/10/2012	15
TER-12-027	RC	767,645.34	6,577,348.04	353.12	16.00	-	(90.00)	9/10/2012	16
TER-12-028	RC	767,672.12	6,577,296.90	359.02	30.00	-	(90.00)	9/10/2012	30
TER-12-029	RC	767,584.33	6,577,244.41	362.99	30.00	-	(90.00)	9/11/2012	30
TER-12-030	RC	767,738.89	6,577,276.32	351.23	21.00	-	(90.00)	9/11/2012	21
TER-12-031	RC	767,695.00	6,577,252.29	355.44	30.00	-	(90.00)	9/11/2012	30
TER-12-032	RC	767,650.40	6,577,227.70	359.32	21.00	-	(90.00)	9/11/2012	21
TER-12-033	RC	767,558.84	6,577,286.66	358.41	20.00	-	(90.00)	9/11/2012	20
TER-12-034	RC	767,534.12	6,577,331.17	352.51	21.00	-	(90.00)	9/12/2012	21
TER-12-035	RC	767,472.10	6,577,236.70	358.57	15.00	-	(90.00)	9/12/2012	15
TER-12-036	RC	767,447.05	6,577,279.93	356.10	19.00	-	(90.00)	9/12/2012	19
TER-12-037	RC	767,498.05	6,577,190.56	365.47	26.00	-	(90.00)	9/12/2012	26
TER-12-038	RC	767,518.91	6,577,150.51	366.89	32.00	-	(90.00)	9/12/2012	32
TER-12-039	RC	767,609.54	6,577,200.88	362.27	27.00	-	(90.00)	9/12/2012	27
TER-12-040	RC	767,577.15	6,577,357.03	350.69	15.00	-	(90.00)	9/13/2012	15
TER-12-041	RC	767,429.79	6,577,213.85	355.93	14.00	-	(90.00)	9/13/2012	14
TER-12-042	RC	767,480.69	6,577,126.14	366.49	14.00	-	(90.00)	9/13/2012	14
TER-12-043	RC	767,504.58	6,577,082.70	363.53	25.00	-	(90.00)	9/13/2012	25
TER-12-044	RC	767,412.08	6,577,147.21	355.85	30.00	-	(90.00)	9/14/2012	30
TER-12-045	RC	767,438.29	6,577,102.26	360.67	24.00	-	(90.00)	9/14/2012	24
TER-12-046	RC	767,462.82	6,577,060.00	363.41	28.00	-	(90.00)	9/14/2012	28
TER-12-047	RC	767,487.07	6,577,017.43	358.87	12.00	-	(90.00)	9/14/2012	12
TER-12-048	RC	767,529.36	6,577,040.08	356.75	15.00	-	(90.00)	9/14/2012	15
TER-12-049	RC	767,549.71	6,577,106.49	360.71	15.00	-	(90.00)	9/14/2012	15
TER-12-050	RC	767,683.32	6,577,471.53	350.43	17.00	-	(90.00)	9/14/2012	17
TER-12-051	RC	767,596.29	6,577,427.51	342.13	15.00	-	(90.00)	9/14/2012	15
TER-12-052	RC	767,507.42	6,577,374.06	348.66	21.00	-	(90.00)	9/14/2012	21
TER-12-053	RC	767,420.92	6,577,328.09	357.77	15.00	-	(90.00)	9/14/2012	15
TER-12-054	RC	767,541.27	6,577,222.09	363.92	27.00	-	(90.00)	9/17/2012	27

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TER-12-055	RC	767,547.89	6,577,191.41	366.56	30.00	150.00	(60.00)	9/17/2012	30
TER-12-056	RC	767,703.79	6,577,321.44	358.30	30.00	150.00	(60.00)	9/17/2012	30
TER-12-057	RC	767,411.53	6,577,036.26	357.38	30.00	150.00	(60.00)	9/17/2012	30
TER-12-058	RC	767,591.15	6,577,133.78	357.53	15.00	-	(90.00)	9/17/2012	15
TER-12-059	RC	767,362.01	6,577,234.42	346.53	17.00	-	(90.00)	9/18/2012	17
TER-12-060	RC	767,394.05	6,577,185.55	351.92	12.00	-	(90.00)	9/19/2012	12
TER-12-061	RC	767,369.56	6,577,122.37	349.11	15.00	-	(90.00)	9/19/2012	15
TER-12-062	RC	767,353.96	6,577,057.98	352.46	12.00	-	(90.00)	9/19/2012	12
TER-12-063	RC	767,323.34	6,577,095.78	353.00	10.00	-	(90.00)	9/19/2012	10
TER-12-064	RC	767,296.62	6,577,135.75	349.04	13.00	-	(90.00)	9/19/2012	13
TER-12-065	RC	767,276.01	6,577,185.44	343.50	15.00	-	(90.00)	9/19/2012	15
TER-12-066	RC	767,244.27	6,577,227.31	340.02	11.00	-	(90.00)	9/19/2012	11
TER-12-067	RC	767,332.28	6,577,281.23	349.41	12.00	-	(90.00)	9/19/2012	12
TER-12-068	RC	767,374.23	6,577,009.66	356.24	23.00	-	(90.00)	9/19/2012	23
TER-12-069	RC	767,303.50	6,577,028.62	361.02	19.00	-	(90.00)	9/20/2012	19
TER-12-070	RC	767,281.82	6,577,072.77	359.10	18.00	-	(90.00)	9/20/2012	18
TER-12-071	RC	767,239.89	6,577,045.75	361.77	18.00	-	(90.00)	9/20/2012	18
TER-12-072	RC	767,219.39	6,577,091.50	359.70	17.00	-	(90.00)	9/20/2012	17
TER-12-073	RC	767,168.98	6,577,069.34	360.04	15.00	-	(90.00)	9/20/2012	15
TER-12-074	RC	767,127.76	6,577,037.96	356.88	15.00	-	(90.00)	9/20/2012	15
TER-12-075	RC	767,144.20	6,577,114.38	357.29	24.00	-	(90.00)	9/21/2012	24
TER-12-076	RC	767,162.24	6,577,174.57	355.41	18.00	-	(90.00)	9/21/2012	18
TER-12-077	RC	767,204.27	6,577,200.73	351.25	15.00	-	(90.00)	9/21/2012	15
TER-12-078	RC	767,187.10	6,577,131.09	357.39	21.00	-	(90.00)	9/21/2012	21
TER-12-079	RC	767,122.91	6,577,146.58	355.13	12.00	-	(90.00)	9/21/2012	12
TER-12-080	RC	767,098.21	6,577,092.92	353.42	14.00	-	(90.00)	9/21/2012	14
TER-12-081	RC	767,078.61	6,577,126.71	348.09	12.00	-	(90.00)	9/21/2012	12
TER-12-082	RC	767,034.96	6,577,102.42	343.66	12.00	-	(90.00)	9/21/2012	12
TER-12-083	RC	767,195.04	6,577,018.79	362.35	15.00	-	(90.00)	9/21/2012	15
TER-12-084	RC	766,944.98	6,577,046.91	345.57	12.00	-	(90.00)	9/21/2012	12
TER-12-085	RC	766,903.05	6,577,025.60	351.43	15.00	-	(90.00)	9/21/2012	15
TER-12-086	RC	766,879.08	6,577,067.31	348.71	12.00	-	(90.00)	9/21/2012	12
TER-12-087	RC	766,920.59	6,577,088.95	346.50	12.00	-	(90.00)	9/21/2012	12
TER-12-088	RC	767,852.34	6,577,404.55	350.97	12.00	-	(90.00)	9/24/2012	12
TER-12-089	RC	767,877.57	6,577,433.43	350.49	27.00	-	(90.00)	9/24/2012	27
TER-12-090	RC	767,828.84	6,577,415.15	354.45	25.00	-	(90.00)	9/24/2012	25
TER-12-091	RC	767,784.34	6,577,501.78	349.57	14.00	-	(90.00)	9/24/2012	14
TER-12-092	RC	767,937.28	6,577,519.38	335.58	17.00	150.00	(60.00)	9/24/2012	17
TER-12-093	RC	767,962.21	6,577,487.15	334.97	13.00	-	(90.00)	9/24/2012	13
TER-12-094	RC	767,787.03	6,577,390.52	354.08	25.00	-	(90.00)	9/24/2012	25
TER-12-095	RC	767,737.01	6,577,477.88	350.96	15.00	-	(90.00)	9/24/2012	15
TER-12-096	RC	767,693.93	6,577,452.94	351.70	16.00	-	(90.00)	9/24/2012	16
TER-12-097	RC	767,745.17	6,577,366.73	355.07	21.00	-	(90.00)	9/24/2012	21
TER-12-098	RC	767,598.05	6,577,222.58	364.77	24.00	-	(90.00)	9/24/2012	24
TER-12-099	RC	767,474.42	6,577,137.37	365.02	30.00	150.00	(60.00)	9/25/2012	30
TER-12-100	RC	766,805.64	6,577,079.95	345.32	50.00	-	(90.00)	9/26/2012	50
TER-12-101	RC	766,657.00	6,577,169.46	346.21	50.00	-	(90.00)	9/26/2012	50
TER-12-102	RC	767,114.23	6,578,014.31	326.99	50.00	-	(90.00)	9/26/2012	50
TER-12-103	RC	767,017.08	6,577,977.43	318.09	50.00	-	(90.00)	9/26/2012	50
TER-12-104	RC	767,092.97	6,578,061.32	328.30	50.00	-	(90.00)	9/27/2012	50
TER-12-105	RC	767,255.75	6,578,047.37	324.51	50.00	150.00	(60.00)	9/27/2012	50
TER-14-106	RC	767,370.91	6,576,921.32	361.02	17.00	-	(90.00)	25/11/2014	17
TER-14-107	RC	767,308.57	6,576,930.23	362.80	35.00	-	(90.00)	1/12/2014	35
TER-14-108	RC	767,276.83	6,576,881.93	367.31	38.00	-	(90.00)	2/12/2014	38
TER-14-109	RC	767,225.16	6,576,846.72	368.54	32.00	-	(90.00)	3/12/2014	32
TER-14-110	RC	767,195.32	6,576,821.62	369.10	44.00	-	(90.00)	3/12/2104	44
TER-14-111	RC	767,161.64	6,576,780.76	368.99	39.00	-	(90.00)	4/12/2014	39
TER-14-112	RC	767,124.84	6,576,752.19	368.00	33.00	-	(90.00)	4/12/2014	33
TER-14-113	RC	767,085.08	6,576,727.51	368.75	36.00	-	(90.00)	5/12/2014	36
TER-14-114	RC	767,034.83	6,576,694.47	367.21	40.00	-	(90.00)	5/12/2014	40
TER-14-115	RC	766,995.24	6,576,673.01	365.11	35.00	-	(90.00)	6/12/2014	35
TER-14-116	RC	766,960.42	6,576,624.73	363.99	23.00	-	(90.00)	6/12/2014	23
TER-14-117	RC	767,457.28	6,576,973.42	359.35	29.00	-	(90.00)	8/12/2014	29
TER-14-118	RC	767,481.89	6,576,940.71	356.64	27.00	-	(90.00)	8/12/2014	27
TER-14-119	RC	767,406.11	6,576,965.66	359.65	30.00	-	(90.00)	8/12/2014	30
TER-14-120	RC	766,928.54	6,576,591.80	363.50	23.00	-	(90.00)	9/12/2014	23

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TER-14-121	RC	766,889.09	6,576,561.79	362.71	24.00	-	(90.00)	9/12/2014	24
TER-14-122	RC	766,847.96	6,576,521.55	362.21	25.00	-	(90.00)	9/12/2014	25
TER-14-123	RC	766,815.38	6,576,477.83	359.51	23.00	-	(90.00)	9/12/2014	23
TER-14-124	RC	766,779.30	6,576,438.38	356.69	18.00	-	(90.00)	9/12/2014	18
TER-14-125	RC	766,738.04	6,576,400.88	352.40	14.00	-	(90.00)	9/12/2014	14
TER-14-126	RC	766,311.46	6,576,244.03	326.92	15.00	-	(90.00)	10/12/2014	15
TER-14-127	RC	766,280.18	6,576,287.74	325.82	10.00	-	(90.00)	10/12/2014	10
TER-14-128	RC	766,328.87	6,576,324.57	323.33	30.00	-	(90.00)	12/15/2014	30
TER-14-129	RC	766,277.14	6,576,221.22	327.54	16.00	-	(90.00)	12/15/2014	16
TER-14-130	RC	766,258.22	6,576,334.60	323.17	14.00	-	(90.00)	12/15/2014	14
TER-14-131	RC	766,298.89	6,576,364.50	317.80	9.00	-	(90.00)	12/16/2014	9
TER-14-132	RC	766,349.24	6,576,374.03	318.79	13.00	-	(90.00)	12/16/2014	13
TER-14-133	RC	766,381.52	6,576,414.41	321.01	12.00	-	(90.00)	12/16/2014	12
TER-14-134	RC	766,421.07	6,576,437.47	325.10	15.00	-	(90.00)	12/16/2014	15
TER-14-135	RC	766,502.81	6,576,512.85	336.28	13.00	-	(90.00)	12/16/2014	13
TER-14-136	RC	766,566.21	6,576,582.82	337.95	15.00	-	(90.00)	12/16/2014	15
TER-14-137	RC	766,545.98	6,576,552.45	338.88	13.00	-	(90.00)	12/17/2014	13
TER-14-138	RC	766,655.54	6,576,666.44	342.75	17.00	-	(90.00)	12/17/2014	17
TER-14-139	RC	766,686.78	6,576,704.04	342.08	16.00	-	(90.00)	12/17/2014	16
TER-14-140	RC	766,722.71	6,576,762.39	351.00	18.00	-	(90.00)	17/12/2014	18
TER-14-141	RC	766,757.94	6,576,781.89	352.05	17.00	-	(90.00)	17/12/2014	17
TER-14-142	RC	766,799.19	6,576,805.17	352.42	19.00	-	(90.00)	17/12/2014	19
TER-14-143	RC	766,857.86	6,576,813.20	356.22	10.00	-	(90.00)	17/12/2014	10
TER-14-144	RC	766,876.82	6,576,885.10	353.92	13.00	-	(90.00)	17/12/2014	13
TER-14-145	RC	766,936.56	6,576,976.52	349.68	11.00	-	(90.00)	18/12/2014	11
TER-14-146	RC	767,430.12	6,576,916.90	358.75	29.00	-	(90.00)	18/12/2014	29
TER-14-147	RC	767,454.91	6,576,881.60	356.71	31.00	-	(90.00)	18/12/2014	31
TER-14-148	RC	767,398.26	6,576,871.49	358.45	32.00	-	(90.00)	18/12/2014	32
TER-14-149	RC	767,339.84	6,576,875.97	362.65	37.00	-	(90.00)	18/12/2014	37
TER-15-150	RC	767,510.82	6,576,909.67	355.92	45.00	-	(90.00)	1/19/2015	45
TER-15-151	RC	767,540.98	6,576,929.91	354.69	52.00	-	(90.00)	1/20/2015	52
TER-15-152	RC	766,647.79	6,576,348.76	351.97	17.00	-	(90.00)	1/21/2015	17
TER-15-153	RC	766,612.35	6,576,329.43	349.06	14.00	-	(90.00)	1/21/2015	14
TER-15-154	RC	767,003.80	6,576,959.70	348.89	15.00	-	(90.00)	1/22/2015	15
TET-11-001	Auger	767,421.66	6,577,226.83	354.63	9.00	-	(90.00)	9/28/2011	9
TET-11-002	Auger	767,393.59	6,577,273.55	350.93	6.00	-	(90.00)	9/29/2011	6
TET-11-003	Auger	767,441.31	6,577,182.93	358.75	8.00	-	(90.00)	9/30/2011	8
TET-11-004	Auger	767,236.81	6,577,139.49	355.65	9.00	-	(90.00)	10/4/2011	9
TET-11-005	Auger	767,564.34	6,577,375.31	347.96	6.00	-	(90.00)	10/5/2011	6
TET-11-006	Auger	767,586.15	6,577,332.30	353.29	6.00	-	(90.00)	10/6/2011	6
TET-11-007	Auger	767,262.72	6,577,088.94	356.86	4.70	-	(90.00)	10/7/2011	5
TET-11-008	Auger	767,213.44	6,577,183.72	352.69	8.00	-	(90.00)	10/12/2011	8
TET-11-009	Auger	767,188.28	6,577,226.21	348.21	5.00	-	(90.00)	10/13/2011	5
TET-11-010	Auger	767,742.73	6,577,464.33	351.88	7.00	-	(90.00)	10/19/2011	7
TET-11-011	Auger	767,719.68	6,577,507.52	348.73	3.50	-	(90.00)	10/21/2011	4
TET-11-012	Auger	767,929.04	6,577,559.11	334.25	4.00	-	(90.00)	10/24/2011	4
TET-11-013	Auger	768,054.21	6,577,516.65	318.21	3.50	-	(90.00)	10/25/2011	4
TET-11-014	Auger	768,089.39	6,577,546.21	321.56	5.50	-	(90.00)	10/27/2011	6
TET-11-015	Auger	768,132.85	6,577,546.19	324.06	4.00	-	(90.00)	10/28/2011	4
TET-11-016	Auger	768,031.40	6,577,580.12	324.86	7.00	-	(90.00)	11/3/2011	7
TET-11-017	Auger	768,413.16	6,577,671.30	301.87	3.00	-	(90.00)	11/5/2011	3
TET-11-018	Auger	768,213.45	6,577,243.28	341.62	6.00	-	(90.00)	11/10/2011	6
TET-11-019	Auger	767,961.64	6,577,473.98	337.26	2.70	-	(90.00)	11/22/2011	3
TET-11-020	Auger	767,768.66	6,577,418.44	353.16	6.00	-	(90.00)	11/23/2011	6
TET-11-021	Auger	767,793.27	6,577,378.95	353.87	10.00	-	(90.00)	11/25/2011	10
TET-11-022	Auger	767,613.65	6,577,285.24	359.27	10.00	-	(90.00)	11/28/2011	10
TET-11-023	Auger	767,637.43	6,577,243.10	362.66	10.00	-	(90.00)	11/29/2011	10
TET-11-024	Auger	767,465.36	6,577,137.79	363.63	10.00	-	(90.00)	12/1/2011	10
TET-11-025	Auger	767,491.86	6,577,094.21	366.47	10.00	-	(90.00)	12/7/2011	10
TET-11-026	Auger	767,051.28	6,577,058.68	348.05	6.00	-	(90.00)	12/8/2011	6
TET-12-027	Auger	768,177.71	6,577,633.07	324.58	5.60	-	(90.00)	2/8/2012	6
TET-12-028	Auger	768,232.92	6,577,670.56	318.66	3.00	-	(90.00)	2/8/2012	3
TET-12-029	Auger	768,537.00	6,577,370.36	331.64	2.00	-	(90.00)	2/9/2012	2
TET-12-030	Auger	768,516.73	6,577,404.17	340.00	3.00	-	(90.00)	2/13/2012	3
TET-12-031	Auger	768,499.23	6,577,437.87	337.55	4.00	-	(90.00)	2/13/2012	4
TET-12-032	Auger	768,447.81	6,577,319.80	342.11	3.00	-	(90.00)	2/14/2012	3

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-12-033	Auger	768,432.17	6,577,354.51	340.85	8.00	-	(90.00)	2/15/2012	8
TET-12-034	Auger	768,410.89	6,577,389.53	333.80	5.45	-	(90.00)	2/15/2012	5
TET-12-035	Auger	768,364.36	6,577,270.65	335.19	3.43	-	(90.00)	2/16/2012	4
TET-12-036	Auger	768,348.47	6,577,308.64	331.56	4.00	-	(90.00)	2/17/2012	4
TET-12-037	Auger	768,275.32	6,577,220.69	340.83	2.00	-	(90.00)	2/20/2012	2
TET-12-038	Auger	768,254.55	6,577,257.78	344.13	5.50	-	(90.00)	2/20/2012	6
TET-12-039	Auger	768,238.80	6,577,290.30	344.16	4.00	-	(90.00)	2/22/2012	4
TET-12-040	Auger	768,185.58	6,577,175.27	335.88	5.00	-	(90.00)	2/23/2012	5
TET-12-041	Auger	768,171.60	6,577,210.85	331.73	3.80	-	(90.00)	2/23/2012	4
TET-12-042	Auger	768,145.80	6,577,243.46	333.30	8.00	-	(90.00)	2/25/2012	8
TET-12-043	Auger	768,129.70	6,577,274.65	330.91	6.80	-	(90.00)	2/27/2012	7
TET-12-044	Auger	768,104.48	6,577,117.98	330.64	8.00	-	(90.00)	2/28/2012	8
TET-12-045	Auger	768,085.76	6,577,162.16	325.96	5.00	-	(90.00)	3/1/2012	5
TET-12-046	Auger	768,066.89	6,577,190.61	322.21	3.00	-	(90.00)	3/6/2012	3
TET-12-047	Auger	768,017.47	6,577,067.51	333.00	6.00	-	(90.00)	3/8/2012	6
TET-12-048	Auger	767,996.61	6,577,106.49	323.14	3.00	-	(90.00)	3/8/2012	3
TET-12-049	Auger	767,971.93	6,577,149.32	333.59	6.00	-	(90.00)	3/9/2012	6
TET-12-050	Auger	767,930.51	6,577,022.23	330.36	5.00	-	(90.00)	3/10/2012	5
TET-12-051	Auger	767,910.56	6,577,059.00	329.42	4.60	-	(90.00)	3/12/2012	5
TET-12-052	Auger	767,889.83	6,577,088.38	338.46	5.00	-	(90.00)	3/12/2012	5
TET-12-053	Auger	767,826.40	6,577,007.50	343.48	5.85	-	(90.00)	3/13/2012	6
TET-12-054	Auger	768,215.10	6,577,479.62	311.88	3.70	-	(90.00)	3/13/2012	4
TET-12-055	Auger	767,110.75	6,577,078.30	354.13	4.75	-	(90.00)	3/14/2012	5
TET-12-056	Auger	768,198.49	6,577,514.04	306.99	2.30	-	(90.00)	3/14/2012	3
TET-12-057	Auger	767,310.92	6,578,034.36	315.37	2.85	-	(90.00)	3/15/2012	3
TET-12-058	Auger	768,170.00	6,577,547.00	321.00	3.00	-	(90.00)	3/14/2012	3
TET-12-059	Auger	767,291.73	6,578,082.12	318.29	13.00	-	(90.00)	3/16/2012	13
TET-12-060	Auger	768,109.45	6,577,466.79	311.58	3.25	-	(90.00)	3/15/2012	4
TET-12-061	Auger	767,268.00	6,578,125.00	312.00	5.70	-	(90.00)	3/19/2012	6
TET-12-062	Auger	768,088.36	6,577,500.41	312.72	2.35	-	(90.00)	3/15/2012	3
TET-12-063	Auger	767,120.01	6,577,963.32	330.61	8.00	-	(90.00)	3/19/2012	8
TET-12-064	Auger	767,215.49	6,578,000.23	330.68	2.00	-	(90.00)	3/16/2012	2
TET-12-065	Auger	767,106.07	6,578,013.74	326.42	7.65	-	(90.00)	3/20/2012	8
TET-12-066	Auger	767,198.39	6,578,046.84	331.57	6.00	-	(90.00)	3/16/2012	6
TET-12-067	Auger	767,089.03	6,578,059.42	328.46	8.00	-	(90.00)	3/21/2012	8
TET-12-068	Auger	767,180.06	6,578,091.55	329.81	10.00	-	(90.00)	3/19/2012	10
TET-12-069	Auger	767,068.94	6,578,103.95	325.34	7.00	-	(90.00)	3/22/2012	7
TET-12-070	Auger	767,164.43	6,578,140.33	326.33	7.00	-	(90.00)	3/20/2012	7
TET-12-071	Auger	766,977.17	6,578,068.99	314.42	4.70	-	(90.00)	3/22/2012	5
TET-12-072	Auger	767,027.01	6,577,930.79	320.67	5.00	-	(90.00)	3/21/2012	5
TET-12-073	Auger	766,878.73	6,578,038.90	300.48	3.75	-	(90.00)	3/23/2012	4
TET-12-074	Auger	767,007.65	6,577,981.72	318.07	9.00	-	(90.00)	3/22/2012	9
TET-12-075	Auger	766,834.71	6,577,966.42	313.79	7.75	-	(90.00)	3/24/2012	8
TET-12-076	Auger	766,993.40	6,578,024.32	311.67	4.00	-	(90.00)	3/22/2012	4
TET-12-077	Auger	766,784.19	6,578,002.72	312.06	4.35	-	(90.00)	3/24/2012	5
TET-12-078	Auger	766,819.74	6,577,908.59	315.61	5.00	-	(90.00)	3/26/2012	5
TET-12-079	Auger	766,839.68	6,577,862.33	313.78	5.00	-	(90.00)	3/26/2012	5
TET-12-080	Auger	766,933.79	6,577,897.75	310.50	8.00	-	(90.00)	3/27/2012	8
TET-12-081	Auger	766,914.99	6,577,943.87	306.33	4.00	-	(90.00)	3/27/2012	4
TET-12-082	Auger	766,904.06	6,577,996.23	302.43	3.45	-	(90.00)	3/28/2012	4
TET-12-083	Auger	768,207.47	6,577,587.54	327.16	4.30	-	(90.00)	3/28/2012	5
TET-12-084	Auger	768,070.53	6,577,900.56	336.93	4.50	-	(90.00)	3/29/2012	5
TET-12-085	Auger	768,068.14	6,577,954.29	338.93	5.50	-	(90.00)	3/29/2012	6
TET-12-086	Auger	768,069.90	6,578,002.11	338.22	3.00	-	(90.00)	3/29/2012	3
TET-12-087	Auger	768,070.23	6,578,051.49	328.06	8.50	-	(90.00)	3/30/2012	9
TET-12-088	Auger	768,167.31	6,578,054.26	333.58	5.00	-	(90.00)	3/31/2012	5
TET-12-089	Auger	768,167.29	6,578,005.44	335.31	4.00	-	(90.00)	3/31/2012	4
TET-12-090	Auger	768,168.70	6,577,952.77	331.50	4.00	-	(90.00)	3/31/2012	4
TET-12-091	Auger	767,967.04	6,577,902.81	344.07	5.00	-	(90.00)	4/2/2012	5
TET-12-092	Auger	767,967.74	6,577,954.90	342.51	3.00	-	(90.00)	4/2/2012	3
TET-12-093	Auger	767,967.55	6,578,001.61	343.21	2.00	-	(90.00)	4/3/2012	2
TET-12-094	Auger	767,966.99	6,578,054.71	335.92	5.00	-	(90.00)	4/3/2012	5
TET-12-095	Auger	767,960.69	6,577,789.43	345.56	4.80	-	(90.00)	4/4/2012	5
TET-12-096	Auger	767,961.73	6,577,744.97	343.16	5.00	-	(90.00)	4/4/2012	5
TET-12-097	Auger	767,958.64	6,577,692.99	343.29	3.70	-	(90.00)	4/5/2012	4
TET-12-098	Auger	768,147.47	6,577,683.24	321.10	5.55	-	(90.00)	4/9/2012	6

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-12-099	Auger	767,672.93	6,577,526.94	349.59	6.00	-	(90.00)	4/10/2012	6
TET-12-100	Auger	767,687.83	6,577,500.05	351.63	6.00	-	(90.00)	4/11/2012	6
TET-12-101	Auger	767,461.40	6,577,540.82	347.12	5.00	-	(90.00)	4/11/2012	5
TET-12-102	Auger	766,708.94	6,577,079.63	346.01	6.00	-	(90.00)	4/12/2012	6
TET-12-103	Auger	766,805.12	6,577,079.89	345.99	3.45	-	(90.00)	4/13/2012	4
TET-12-104	Auger	766,906.28	6,577,081.19	348.05	3.70	-	(90.00)	4/13/2012	4
TET-12-105	Auger	766,605.90	6,577,079.62	349.45	4.65	-	(90.00)	4/14/2012	5
TET-12-106	Auger	766,583.19	6,577,110.16	350.95	3.00	-	(90.00)	4/16/2012	3
TET-12-107	Auger	766,681.38	6,577,128.30	347.23	4.75	-	(90.00)	4/16/2012	5
TET-12-108	Auger	766,764.25	6,577,138.80	342.67	2.75	-	(90.00)	4/17/2012	3
TET-12-109	Auger	766,880.18	6,577,128.13	343.10	3.75	-	(90.00)	4/17/2012	4
TET-12-110	Auger	766,554.77	6,577,170.59	351.74	3.70	-	(90.00)	4/18/2012	4
TET-12-111	Auger	766,656.66	6,577,168.97	347.02	5.00	-	(90.00)	4/18/2012	5
TET-12-112	Auger	766,755.81	6,577,170.24	347.29	2.60	-	(90.00)	4/19/2012	3
TET-12-113	Auger	766,855.77	6,577,168.81	336.25	1.50	-	(90.00)	4/19/2012	2
TET-12-114	Auger	766,531.33	6,577,222.27	351.91	3.50	-	(90.00)	4/20/2012	4
TET-12-115	Auger	766,632.77	6,577,221.59	348.02	5.00	-	(90.00)	4/20/2012	5
TET-12-116	Auger	766,732.28	6,577,214.20	342.79	3.00	-	(90.00)	4/23/2012	3
TET-12-117	Auger	766,831.44	6,577,216.09	337.77	2.90	-	(90.00)	4/23/2012	3
TET-12-118	Auger	766,806.91	6,577,252.00	341.05	4.50	-	(90.00)	4/24/2012	5
TET-12-119	Auger	766,701.16	6,577,266.10	340.57	5.00	-	(90.00)	4/25/2012	5
TET-12-120	Auger	766,603.82	6,577,260.77	353.64	9.00	-	(90.00)	4/25/2012	9
TET-12-121	Auger	767,003.04	6,577,077.92	341.65	3.45	-	(90.00)	4/26/2012	4
TET-12-122	Auger	767,854.18	6,577,465.46	351.97	11.80	-	(90.00)	4/28/2012	12
TET-12-123	Auger	767,864.81	6,577,446.02	354.54	6.35	-	(90.00)	4/28/2012	7
TET-12-124	Auger	767,706.38	6,577,322.98	359.08	13.00	-	(90.00)	4/30/2012	13
TET-12-125	Auger	767,552.27	6,577,197.87	367.07	10.35	-	(90.00)	5/3/2012	11
TET-12-126	Auger	767,407.54	6,577,035.02	357.63	13.00	-	(90.00)	5/4/2012	13
TET-12-127	Auger	767,381.08	6,577,079.97	352.37	9.00	-	(90.00)	5/10/2012	9
TET-12-128	Auger	767,524.55	6,577,234.50	363.02	10.00	-	(90.00)	5/14/2012	10
TET-12-129	Auger	767,561.72	6,577,173.36	366.95	14.00	-	(90.00)	5/16/2012	14
TET-12-130	Auger	767,497.81	6,577,280.82	357.33	12.90	-	(90.00)	5/17/2012	13
TET-12-131	Auger	767,681.68	6,577,366.88	354.76	8.85	-	(90.00)	5/18/2012	9
TET-12-132	Auger	767,658.20	6,577,410.38	351.27	9.00	-	(90.00)	5/19/2012	9
TET-12-133	Auger	767,628.30	6,577,466.71	343.70	7.00	-	(90.00)	5/21/2012	7
TET-12-134	Auger	767,085.30	6,577,041.09	351.24	7.60	-	(90.00)	5/22/2012	8
TET-12-135	Auger	767,299.26	6,577,196.82	342.14	1.40	-	(90.00)	5/23/2012	2
TET-12-136	Auger	768,144.24	6,577,626.38	327.56	6.00	-	(90.00)	5/23/2012	6
TET-12-137	Auger	766,261.71	6,577,354.80	350.90	6.50	-	(90.00)	5/24/2012	7
TET-12-138	Auger	766,264.29	6,577,408.21	349.09	6.00	-	(90.00)	5/24/2012	6
TET-12-139	Auger	766,259.20	6,577,450.21	343.85	5.00	-	(90.00)	5/25/2012	5
TET-12-140	Auger	765,487.39	6,577,552.97	338.60	11.50	-	(90.00)	5/26/2012	12
TET-12-141	Auger	765,485.49	6,577,645.70	341.85	14.00	-	(90.00)	5/29/2012	14
TET-12-142	Auger	767,858.96	6,577,457.61	352.80	15.63	-	(90.00)	5/31/2012	20
TET-12-143	Auger	767,871.00	6,577,436.50	352.59	12.32	-	(90.00)	6/2/2012	16
TET-12-144	Auger	767,703.82	6,577,322.09	359.04	12.60	-	(90.00)	6/5/2012	15
TET-12-145	Auger	767,547.58	6,577,196.16	367.10	9.87	-	(90.00)	6/6/2012	12
TET-12-146	Auger	767,564.60	6,577,162.87	365.66	13.15	-	(90.00)	6/7/2012	19
TET-12-147	Auger	765,483.90	6,577,745.73	344.28	13.70	-	(90.00)	6/12/2012	14
TET-12-148	Auger	765,486.25	6,577,848.38	335.52	10.00	-	(90.00)	6/13/2012	10
TET-12-149	Auger	765,486.89	6,577,946.73	332.90	10.00	-	(90.00)	6/15/2012	10
TET-12-150	Auger	765,586.08	6,577,888.55	321.68	3.00	-	(90.00)	6/16/2012	3
TET-12-151	Auger	765,585.88	6,577,799.51	337.16	7.80	-	(90.00)	6/18/2012	8
TET-12-152	Auger	765,585.58	6,577,696.91	346.58	6.90	-	(90.00)	6/18/2012	7
TET-12-153	Auger	765,586.83	6,577,580.44	345.36	8.00	-	(90.00)	6/19/2012	8
TET-12-154	Auger	765,677.10	6,577,647.45	333.56	7.20	-	(90.00)	6/19/2012	8
TET-12-155	Auger	765,676.90	6,577,748.00	327.29	4.60	-	(90.00)	6/19/2012	5
TET-12-156	Auger	765,676.86	6,577,847.68	321.15	7.00	-	(90.00)	6/20/2012	7
TET-12-157	Auger	765,786.36	6,577,847.43	329.96	7.50	-	(90.00)	6/20/2012	8
TET-12-158	Auger	765,786.30	6,577,749.04	337.09	10.00	-	(90.00)	6/22/2012	10
TET-12-159	Auger	765,788.24	6,577,649.17	343.82	11.50	-	(90.00)	6/22/2012	12
TET-12-160	Auger	765,387.76	6,577,946.62	331.04	6.00	-	(90.00)	6/23/2012	6
TET-12-161	Auger	765,386.40	6,577,857.99	342.87	6.00	-	(90.00)	6/23/2012	6
TET-12-162	Auger	765,386.17	6,577,749.60	338.75	5.00	-	(90.00)	6/23/2012	5
TET-12-163	Auger	765,387.03	6,577,649.85	337.49	9.40	-	(90.00)	6/25/2012	10
TET-12-164	Auger	765,387.21	6,577,599.43	334.37	10.00	-	(90.00)	6/27/2012	10

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-12-165	Auger	765,387.11	6,577,699.03	337.70	6.20	-	(90.00)	6/25/2012	7
TET-12-166	Auger	765,389.01	6,577,798.16	342.29	3.80	-	(90.00)	6/28/2012	4
TET-12-167	Auger	765,387.78	6,577,896.28	335.96	4.90	-	(90.00)	6/28/2012	5
TET-12-168	Auger	765,387.41	6,577,996.71	329.08	6.40	-	(90.00)	6/30/2012	7
TET-12-169	Auger	765,489.39	6,577,600.64	339.61	7.00	-	(90.00)	7/4/2012	7
TET-12-170	Auger	765,488.05	6,577,698.64	345.11	6.00	-	(90.00)	7/5/2012	6
TET-12-171	Auger	765,487.55	6,577,797.79	340.35	10.00	-	(90.00)	7/9/2012	10
TET-12-172	Auger	765,487.39	6,577,897.28	328.36	7.90	-	(90.00)	7/10/2012	8
TET-12-173	Auger	765,488.01	6,577,997.48	341.61	11.00	-	(90.00)	7/11/2012	11
TET-12-174	Auger	765,586.93	6,577,548.99	344.06	5.60	-	(90.00)	7/12/2012	6
TET-12-175	Auger	765,589.45	6,577,647.64	346.34	8.00	-	(90.00)	7/13/2012	8
TET-12-176	Auger	765,587.88	6,577,744.26	339.76	6.00	-	(90.00)	7/14/2012	6
TET-12-177	Auger	768,155.00	6,577,627.00	325.00	9.00	-	(90.00)	10/31/2012	9
TET-12-178	Auger	767,820.00	6,577,437.00	359.00	8.00	-	(90.00)	11/1/2012	8
TET-12-179	Auger	767,584.00	6,577,244.00	362.00	8.30	-	(90.00)	11/3/2012	9
TET-12-180	Auger	767,374.00	6,577,010.00	356.00	10.00	-	(90.00)	11/6/2012	10
TET-12-181	Auger	767,010.00	6,577,025.00	348.00	7.00	-	(90.00)	11/7/2012	7
TET-12-182	Auger	767,362.00	6,577,235.00	346.00	10.00	-	(90.00)	11/8/2012	10
TET-12-183	Auger	767,628.00	6,577,157.00	358.00	5.00	-	(90.00)	11/13/2012	5
TET-12-184	Auger	768,026.00	6,577,540.00	326.00	4.50	-	(90.00)	11/14/2012	5
TET-13-185	Auger	766,850.00	6,576,848.27	357.00	2.65	-	(90.00)	4/19/2013	1
TET-13-186	Auger	766,850.00	6,576,725.00	358.00	2.00	-	(90.00)	4/19/2013	1
TET-13-187	Auger	766,850.00	6,576,525.00	358.00	10.00	-	(90.00)	4/19/2013	1
TET-13-188	Auger	766,651.00	6,576,776.00	314.00	2.00	-	(90.00)	4/20/2013	1
TET-13-189	Auger	766,656.00	6,576,691.00	339.00	3.00	-	(90.00)	4/20/2013	1
TET-13-190	Auger	766,650.00	6,576,600.00	345.00	7.00	-	(90.00)	4/20/2013	1
TET-13-191	Auger	766,650.00	6,576,650.00	345.00	3.00	-	(90.00)	4/22/2013	1
TET-13-192	Auger	766,651.00	6,576,512.00	353.00	1.30	-	(90.00)	4/22/2013	1
TET-13-193	Auger	766,649.00	6,576,405.00	353.00	1.55	-	(90.00)	4/22/2013	1
TET-13-194	Auger	766,651.00	6,576,348.00	352.00	1.60	-	(90.00)	4/22/2013	1
TET-13-195	Auger	766,660.00	6,576,301.00	349.00	1.80	-	(90.00)	4/22/2013	1
TET-13-196	Auger	766,450.00	6,576,350.00	336.00	2.00	-	(90.00)	4/22/2013	1
TET-13-197	Auger	766,448.00	6,576,468.00	332.00	2.50	-	(90.00)	4/23/2013	1
TET-13-198	Auger	766,450.00	6,576,550.00	336.00	1.00	-	(90.00)	4/23/2013	1
TET-13-199	Auger	766,450.00	6,576,625.00	329.00	2.00	-	(90.00)	4/23/2013	1
TET-13-200	Auger	766,850.00	6,576,775.00	361.00	2.00	-	(90.00)	4/23/2013	1
TET-13-201	Auger	766,650.00	6,576,255.00	346.00	2.00	-	(90.00)	4/23/2013	1
TET-13-202	Auger	766,450.00	6,576,410.00	336.00	1.30	-	(90.00)	4/23/2013	1
TET-13-203	Auger	766,450.00	6,576,488.00	331.00	2.60	-	(90.00)	4/24/2013	1
TET-13-204	Auger	766,249.00	6,576,375.00	322.00	2.00	-	(90.00)	4/24/2013	1
TET-13-205	Auger	766,250.00	6,576,302.00	325.00	0.50	-	(90.00)	4/24/2013	1
TET-13-206	Auger	766,250.00	6,576,225.00	334.00	1.00	-	(90.00)	4/24/2013	1
TET-13-207	Auger	766,251.00	6,576,180.00	330.00	1.00	-	(90.00)	4/24/2013	1
TET-13-208	Auger	766,850.00	6,576,891.00	351.00	1.70	-	(90.00)	4/24/2013	1
TET-13-209	Auger	766,866.00	6,576,895.00	357.00	2.00	-	(90.00)	4/25/2013	1
TET-13-210	Auger	767,054.00	6,576,866.00	364.00	2.00	-	(90.00)	4/25/2013	1
TET-13-211	Auger	767,250.00	6,576,950.00	364.00	3.00	-	(90.00)	4/25/2013	1
TET-13-212	Auger	767,344.00	6,576,951.00	366.00	0.50	-	(90.00)	4/25/2013	1
TET-13-213	Auger	767,446.00	6,576,873.00	355.00	0.50	-	(90.00)	4/25/2013	1
TET-13-214	Auger	766,247.00	6,576,131.00	323.00	4.60	-	(90.00)	4/26/2013	1
TET-13-215	Auger	766,249.00	6,576,155.00	324.00	3.00	-	(90.00)	4/26/2013	1
TET-13-216	Auger	766,253.00	6,576,206.00	339.00	2.00	-	(90.00)	4/26/2013	1
TET-13-217	Auger	766,236.00	6,576,257.00	331.00	2.00	-	(90.00)	4/26/2013	1
TET-13-218	Auger	766,393.00	6,576,256.00	330.00	4.00	-	(90.00)	4/26/2013	1
TET-13-219	Auger	766,751.00	6,576,677.00	348.00	2.00	-	(90.00)	4/29/2013	1
TET-13-220	Auger	766,749.00	6,576,724.00	346.00	3.00	-	(90.00)	4/29/2013	1
TET-13-221	Auger	766,754.00	6,576,750.00	348.00	2.00	-	(90.00)	4/29/2013	1
TET-13-222	Auger	766,749.00	6,576,775.00	352.00	1.00	-	(90.00)	4/29/2013	1
TET-13-223	Auger	766,748.00	6,576,795.00	358.00	2.00	-	(90.00)	4/29/2013	1
TET-13-224	Auger	766,751.00	6,576,782.00	355.00	1.70	-	(90.00)	4/29/2013	1
TET-13-225	Auger	766,746.00	6,576,834.00	354.00	1.00	-	(90.00)	4/29/2013	1
TET-13-226	Auger	766,350.00	6,576,275.00	328.00	3.00	-	(90.00)	4/30/2013	1
TET-13-227	Auger	766,350.00	6,576,300.00	326.00	3.00	-	(90.00)	4/30/2013	1
TET-13-228	Auger	766,350.00	6,576,325.00	324.00	2.40	-	(90.00)	4/30/2013	1
TET-13-229	Auger	766,350.00	6,576,350.00	321.00	2.00	-	(90.00)	4/30/2013	1
TET-13-230	Auger	766,350.00	6,576,375.00	318.00	2.00	-	(90.00)	4/30/2013	1

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-13-231	Auger	766,350.00	6,576,400.00	318.00	3.00	-	(90.00)	4/30/2013	1
TET-13-232	Auger	766,350.00	6,576,425.00	318.00	3.00	-	(90.00)	5/1/2013	1
TET-13-233	Auger	766,350.00	6,576,450.00	317.00	3.00	-	(90.00)	5/1/2013	1
TET-13-234	Auger	766,550.00	6,576,450.00	350.00	1.25	-	(90.00)	5/1/2013	1
TET-13-235	Auger	766,550.00	6,576,475.00	347.00	2.00	-	(90.00)	5/1/2013	1
TET-13-236	Auger	766,550.00	6,576,500.00	345.00	2.00	-	(90.00)	5/1/2013	1
TET-13-237	Auger	766,550.00	6,576,525.00	344.00	2.00	-	(90.00)	5/1/2013	1
TET-13-238	Auger	766,550.00	6,576,550.00	338.00	3.00	-	(90.00)	5/2/2013	1
TET-13-239	Auger	766,550.00	6,576,575.00	336.00	2.00	-	(90.00)	5/2/2013	1
TET-13-240	Auger	766,550.00	6,576,600.00	335.00	1.20	-	(90.00)	5/2/2013	1
TET-13-241	Auger	766,550.00	6,576,625.00	337.00	3.00	-	(90.00)	5/2/2013	1
TET-13-242	Auger	766,750.00	6,576,500.00	344.00	3.00	-	(90.00)	5/2/2013	1
TET-13-243	Auger	766,750.00	6,576,475.00	351.00	2.00	-	(90.00)	5/6/2013	1
TET-13-244	Auger	766,750.00	6,576,450.00	357.00	3.00	-	(90.00)	5/6/2013	1
TET-13-245	Auger	766,750.00	6,576,425.00	355.00	2.00	-	(90.00)	5/6/2013	1
TET-13-246	Auger	766,750.00	6,576,550.00	356.00	2.00	-	(90.00)	5/6/2013	1
TET-13-247	Auger	766,750.00	6,576,600.00	353.00	3.00	-	(90.00)	5/6/2013	1
TET-13-248	Auger	766,750.00	6,576,400.00	353.00	3.00	-	(90.00)	5/7/2013	1
TET-13-249	Auger	766,750.00	6,576,375.00	356.00	2.00	-	(90.00)	5/7/2013	1
TET-13-250	Auger	766,850.00	6,576,600.00	359.00	2.60	-	(90.00)	5/7/2013	1
TET-13-251	Auger	766,953.00	6,576,800.00	364.00	4.00	-	(90.00)	5/7/2013	1
TET-13-252	Auger	766,950.00	6,576,825.00	361.00	2.00	-	(90.00)	5/8/2013	1
TET-13-253	Auger	766,950.00	6,576,850.00	358.00	3.00	-	(90.00)	5/8/2013	1
TET-13-254	Auger	766,950.00	6,576,875.00	355.00	2.00	-	(90.00)	5/8/2013	1
TET-13-255	Auger	766,750.00	6,576,900.00	352.00	1.00	-	(90.00)	5/8/2013	1
TET-13-256	Auger	766,950.00	6,576,925.00	349.00	3.00	-	(90.00)	5/8/2013	1
TET-13-257	Auger	766,945.00	6,576,775.00	365.00	3.00	-	(90.00)	5/9/2013	1
TET-13-258	Auger	766,950.00	6,576,750.00	365.00	2.00	-	(90.00)	5/9/2013	1
TET-13-259	Auger	766,950.00	6,576,725.00	365.00	3.00	-	(90.00)	5/9/2013	1
TET-13-260	Auger	766,950.00	6,576,700.00	364.00	3.00	-	(90.00)	5/9/2013	1
TET-13-261	Auger	766,950.00	6,576,675.00	362.00	3.00	-	(90.00)	5/9/2013	1
TET-13-262	Auger	766,950.00	6,576,650.00	368.00	2.00	-	(90.00)	5/10/2013	1
TET-13-263	Auger	766,950.00	6,576,625.00	364.00	2.40	-	(90.00)	5/10/2013	1
TET-13-264	Auger	766,950.00	6,576,600.00	364.00	2.00	-	(90.00)	5/10/2013	1
TET-13-265	Auger	766,950.00	6,576,575.00	364.00	3.00	-	(90.00)	5/10/2013	1
TET-13-266	Auger	766,850.00	6,576,550.00	363.00	4.00	-	(90.00)	7/6/2013	1
TET-13-267	Auger	767,050.00	6,576,700.00	374.00	16.00	-	(90.00)	7/8/2013	1
TET-13-268	Auger	767,350.00	6,576,900.00	362.00	15.00	-	(90.00)	7/8/2013	1
TET-13-269	Auger	767,150.00	6,576,800.00	369.00	5.00	-	(90.00)	7/10/2013	1
TET-13-270	Auger	766,750.00	6,576,428.00	358.00	6.00	-	(90.00)	7/10/2013	1
TET-13-271	Auger	767,450.00	6,576,975.00	361.00	5.00	-	(90.00)	7/11/2013	1
TET-13-272	Auger	767,450.00	6,576,923.00	361.00	11.00	-	(90.00)	7/12/2013	1
TET-13-273	Auger	767,250.00	6,576,850.00	369.00	5.00	-	(90.00)	7/15/2013	1
TET-13-274	Auger	767,150.00	6,576,775.00	374.00	15.00	-	(90.00)	7/16/2013	1
TET-13-275	Auger	766,972.00	6,576,644.00	364.00	7.90	-	(90.00)	7/17/2013	1
TET-13-276	Auger	766,850.00	6,576,475.00	363.00	7.00	-	(90.00)	7/17/2013	1
TET-13-277	Auger	766,750.00	6,576,375.00	359.00	5.00	-	(90.00)	7/18/2013	1
TET-13-278	Auger	766,650.00	6,576,325.00	344.00	6.00	-	(90.00)	7/18/2013	1
TET-13-279	Auger	766,625.00	6,576,288.00	346.00	6.00	-	(90.00)	7/19/2013	1
TET-13-280	Auger	766,400.00	6,576,425.00	326.00	4.90	-	(90.00)	7/20/2013	1
TET-13-281	Auger	766,307.00	6,576,357.00	334.00	2.50	-	(90.00)	7/22/2013	1
TET-13-282	Auger	766,752.00	6,576,599.00	361.00	9.00	-	(90.00)	7/22/2013	1
TET-13-283	Auger	766,651.00	6,576,552.00	347.00	5.90	-	(90.00)	7/23/2013	1
TET-13-284	Auger	766,451.00	6,576,150.00	342.00	3.90	-	(90.00)	7/23/2013	1
TET-13-285	Auger	766,448.00	6,576,101.00	341.00	4.30	-	(90.00)	7/24/2013	1
TET-13-286	Auger	767,147.00	6,576,979.00	370.00	4.90	-	(90.00)	7/24/2013	1
TET-13-287	Auger	767,052.00	6,577,003.00	356.00	5.60	-	(90.00)	7/25/2013	1
TET-13-288	Auger	767,050.00	6,576,925.00	363.00	5.00	-	(90.00)	7/26/2013	1
TET-13-289	Auger	766,950.00	6,576,999.00	345.00	8.00	-	(90.00)	7/29/2013	1
TET-13-290	Auger	766,850.00	6,576,800.00	361.00	4.00	-	(90.00)	7/30/2013	1
TET-13-291	Auger	767,288.00	6,576,893.00	374.00	12.95	-	(90.00)	7/31/2013	1
TET-13-292	Auger	767,263.00	6,576,802.00	364.00	12.00	-	(90.00)	8/1/2013	1
TET-13-293	Auger	767,313.00	6,576,893.00	371.00	14.50	-	(90.00)	8/5/2013	1
TET-13-294	Auger	767,313.00	6,576,918.00	372.00	18.00	-	(90.00)	8/6/2013	1
TET-13-295	Auger	767,313.00	6,576,943.00	368.00	14.00	-	(90.00)	8/8/2013	1
TET-13-296	Auger	767,313.00	6,576,868.00	369.00	12.80	-	(90.00)	8/9/2013	1

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-13-297	Auger	767,450.00	6,576,843.00	363.00	8.00	-	(90.00)	8/12/2013	1
TET-13-298	Auger	767,313.00	6,576,843.00	364.00	3.95	-	(90.00)	8/12/2013	1
TET-13-299	Auger	767,263.00	6,576,827.00	371.00	4.80	-	(90.00)	8/13/2013	1
TET-13-300	Auger	767,263.00	6,576,777.00	367.00	10.00	-	(90.00)	8/13/2013	1
TET-13-301	Auger	767,150.00	6,576,825.00	371.00	12.00	-	(90.00)	8/14/2013	1
TET-13-302	Auger	767,150.00	6,576,750.00	364.00	5.50	-	(90.00)	8/15/2013	1
TET-13-303	Auger	767,050.00	6,576,650.00	367.00	9.30	-	(90.00)	8/16/2013	1
TET-13-304	Auger	767,050.00	6,576,675.00	368.00	4.50	-	(90.00)	8/16/2013	1
TET-13-305	Auger	767,054.00	6,576,725.00	371.00	15.00	-	(90.00)	8/17/2013	1
TET-13-306	Auger	767,050.00	6,576,750.00	372.00	9.00	-	(90.00)	8/19/2013	1
TET-13-307	Auger	767,500.00	6,576,943.00	361.00	7.00	-	(90.00)	8/20/2013	1
TET-13-308	Auger	767,500.00	6,576,918.00	362.00	5.00	-	(90.00)	8/21/2013	1
TET-13-309	Auger	767,500.00	6,576,993.00	359.00	9.70	-	(90.00)	8/23/2013	1
TET-13-310	Auger	767,550.00	6,576,843.00	360.00	5.30	-	(90.00)	8/26/2013	1
TET-13-311	Auger	767,550.00	6,576,868.00	360.00	6.00	-	(90.00)	8/26/2013	1
TET-13-312	Auger	767,550.00	6,576,893.00	360.00	4.00	-	(90.00)	8/27/2013	1
TET-13-313	Auger	767,548.00	6,576,918.00	362.00	5.00	-	(90.00)	8/28/2013	1
TET-13-314	Auger	766,525.00	6,576,325.00	345.00	2.50	-	(90.00)	8/29/2013	1
TET-13-315	Auger	766,527.00	6,576,300.00	340.00	2.00	-	(90.00)	8/29/2013	1
TET-13-316	Auger	766,150.00	6,576,271.00	319.00	4.00	-	(90.00)	8/29/2013	1
TET-13-317	Auger	766,148.00	6,576,247.00	311.00	3.00	-	(90.00)	8/30/2013	1
TET-13-318	Auger	766,163.00	6,576,218.00	316.00	3.00	-	(90.00)	8/30/2013	1
TET-13-319	Auger	767,650.00	6,576,918.00	343.00	3.00	-	(90.00)	8/30/2013	1
TET-13-320	Auger	767,650.00	6,576,943.00	359.00	11.00	-	(90.00)	8/31/2013	1
TET-13-321	Auger	766,525.00	6,576,225.00	347.00	5.00	-	(90.00)	9/2/2013	1
TET-13-322	Auger	766,525.00	6,576,200.00	352.00	3.00	-	(90.00)	9/2/2013	1
TET-13-323	Auger	766,342.00	6,576,023.00	328.00	4.00	-	(90.00)	9/3/2013	1
TET-13-324	Auger	766,343.00	6,575,978.00	334.00	4.00	-	(90.00)	9/3/2013	1
TET-13-325	Auger	766,343.00	6,575,934.00	337.00	5.00	-	(90.00)	9/3/2013	1
TET-13-326	Auger	767,650.00	6,576,968.00	363.00	12.00	-	(90.00)	9/4/2013	1
TET-13-327	Auger	767,650.00	6,576,993.00	363.00	8.50	-	(90.00)	9/5/2013	1
TET-13-328	Auger	767,750.00	6,576,950.00	358.00	3.00	-	(90.00)	9/5/2013	1
TET-13-329	Auger	768,362.00	6,577,298.00	341.00	1.60	-	(90.00)	9/6/2013	1
TET-13-330	Auger	768,360.00	6,577,315.00	338.00	2.00	-	(90.00)	9/6/2013	1
TET-13-331	Auger	768,376.00	6,577,297.00	348.00	2.00	-	(90.00)	9/6/2013	1
TET-13-332	Auger	768,386.00	6,577,301.00	350.00	2.80	-	(90.00)	9/6/2013	1
TET-13-333	Auger	768,405.00	6,577,303.00	351.00	2.00	-	(90.00)	9/6/2013	1
TET-13-334	Auger	768,378.00	6,577,304.00	346.00	2.00	-	(90.00)	9/9/2013	1
TET-13-335	Auger	768,381.00	6,577,318.00	342.00	2.00	-	(90.00)	9/9/2013	1
TET-13-336	Auger	768,376.00	6,577,298.00	342.00	1.65	-	(90.00)	9/9/2013	1
TET-13-337	Auger	768,387.00	6,577,296.00	341.00	2.00	-	(90.00)	9/9/2013	1
TET-13-338	Auger	768,384.00	6,577,296.00	340.00	1.00	-	(90.00)	9/9/2013	1
TET-13-339	Auger	768,350.00	6,577,300.00	332.00	4.00	-	(90.00)	9/10/2013	1
TET-13-340	Auger	768,424.00	6,577,323.00	343.00	4.40	-	(90.00)	9/10/2013	1
TET-13-341	Auger	768,436.00	6,577,329.00	342.00	2.75	-	(90.00)	9/10/2013	1
TET-13-342	Auger	768,446.00	6,577,334.00	344.00	1.70	-	(90.00)	9/11/2013	1
TET-13-343	Auger	768,471.00	6,577,373.00	341.00	3.00	-	(90.00)	9/11/2013	1
TET-13-344	Auger	768,487.00	6,577,359.00	339.00	2.30	-	(90.00)	9/11/2013	1
TET-13-345	Auger	768,400.00	6,577,317.00	344.00	4.60	-	(90.00)	9/12/2013	1
TET-13-346	Auger	768,410.00	6,577,326.00	342.00	2.40	-	(90.00)	9/12/2013	1
TET-13-347	Auger	768,471.00	6,577,340.00	344.00	3.40	-	(90.00)	9/13/2013	1
TET-13-348	Auger	768,443.00	6,577,344.00	345.00	1.70	-	(90.00)	9/13/2013	1
TET-13-349	Auger	768,444.00	6,577,332.00	350.00	1.40	-	(90.00)	9/13/2013	1
TET-13-350	Auger	768,499.00	6,577,367.00	342.00	1.00	-	(90.00)	9/14/2013	1
TET-13-351	Auger	768,278.00	6,577,284.00	335.00	2.50	-	(90.00)	9/14/2013	1
TET-13-352	Auger	768,230.00	6,577,276.00	351.00	1.60	-	(90.00)	9/14/2013	1
TET-13-353	Auger	768,309.00	6,577,306.00	327.00	1.85	-	(90.00)	9/16/2013	1
TET-13-354	Auger	768,520.00	6,577,363.00	335.00	2.00	-	(90.00)	9/16/2013	1
TET-13-355	Auger	768,526.00	6,577,434.00	339.00	4.00	-	(90.00)	9/16/2013	1
TET-13-356	Auger	768,520.00	6,577,371.00	340.00	2.50	-	(90.00)	9/17/2013	1
TET-13-357	Auger	768,496.00	6,577,422.00	343.00	3.40	-	(90.00)	9/17/2013	1
TET-13-358	Auger	768,550.00	6,577,437.00	339.00	3.30	-	(90.00)	9/17/2013	1
TET-13-359	Auger	768,575.00	6,577,440.00	336.00	3.30	-	(90.00)	9/18/2013	1
TET-13-360	Auger	768,474.00	6,577,408.00	334.00	4.00	-	(90.00)	9/18/2013	1
TET-13-361	Auger	768,200.00	6,577,262.00	342.00	7.00	-	(90.00)	9/23/2013	1
TET-13-362	Auger	767,200.00	6,577,275.00	345.00	6.00	-	(90.00)	9/26/2013	1

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-13-363	Auger	768,175.00	6,577,245.00	335.00	4.70	-	(90.00)	9/27/2013	1
TET-13-364	Auger	768,150.00	6,577,220.00	327.00	4.00	-	(90.00)	9/27/2013	1
TET-13-365	Auger	768,150.00	6,577,235.00	323.00	5.90	-	(90.00)	9/27/2013	1
TET-13-366	Auger	768,150.00	6,577,255.00	341.00	5.60	-	(90.00)	9/28/2013	1
TET-13-367	Auger	768,125.00	6,577,220.00	332.00	3.00	-	(90.00)	9/28/2013	1
TET-13-368	Auger	768,125.00	6,577,235.00	340.00	8.00	-	(90.00)	9/30/2013	1
TET-13-369	Auger	768,100.00	6,577,220.00	322.00	3.00	-	(90.00)	10/1/2013	1
TET-13-370	Auger	768,100.00	6,577,235.00	334.00	3.00	-	(90.00)	10/1/2013	1
TET-14-371	Auger	766,961.00	6,577,006.00	339.00	3.00	-	(90.00)	12/23/2014	1
TET-14-372	Auger	766,977.00	6,576,984.00	343.00	1.90	-	(90.00)	12/23/2014	1
TET-14-373	Auger	766,981.00	6,576,977.00	344.00	1.80	-	(90.00)	12/23/2014	1
TET-14-374	Auger	766,987.00	6,576,969.00	346.00	2.00	-	(90.00)	12/23/2014	1
TET-14-375	Auger	766,992.00	6,576,960.00	347.00	3.00	-	(90.00)	12/24/2014	1
TET-14-376	Auger	766,997.00	6,576,951.00	349.00	3.00	-	(90.00)	12/24/2014	1
TET-14-377	Auger	767,002.00	6,576,943.00	350.00	2.80	-	(90.00)	12/24/2014	1
TET-14-378	Auger	767,007.00	6,576,934.00	352.00	3.00	-	(90.00)	12/24/2014	1
TET-14-379	Auger	767,012.00	6,576,925.00	353.00	3.00	-	(90.00)	12/29/2014	1
TET-14-380	Auger	767,017.00	6,576,917.00	355.00	3.00	-	(90.00)	12/29/2014	1
TET-14-381	Auger	767,022.00	6,576,908.00	355.00	3.00	-	(90.00)	12/29/2014	1
TET-14-382	Auger	766,669.00	6,576,699.00	353.00	3.00	-	(90.00)	12/30/2014	1
TET-14-383	Auger	766,674.00	6,576,690.00	354.00	1.00	-	(90.00)	12/30/2014	1
TET-14-384	Auger	766,679.00	6,576,681.00	355.00	1.00	-	(90.00)	12/30/2014	1
TET-14-385	Auger	766,684.00	6,576,673.00	358.00	3.00	-	(90.00)	12/31/2014	1
TET-14-386	Auger	766,689.00	6,576,664.00	358.00	3.00	-	(90.00)	12/31/2014	1
TET-15-387	Auger	766,694.00	6,576,655.00	360.00	2.00	-	(90.00)	12/31/2014	1
TET-15-388	Auger	766,450.00	6,576,125.00	345.00	12.00	-	(90.00)	3/26/2015	1
TET-15-389	Auger	766,450.00	6,576,175.00	344.00	6.40	-	(90.00)	3/27/2015	1
TET-15-390	Auger	766,450.00	6,576,195.00	341.00	6.00	-	(90.00)	3/28/2015	1
TET-15-391	Auger	766,450.00	6,576,235.00	336.00	4.00	-	(90.00)	3/28/2015	1
TET-15-392	Auger	766,340.00	6,575,820.00	348.00	14.00	-	(90.00)	3/31/2015	1
TET-15-393	Auger	766,340.00	6,575,840.00	347.00	9.00	-	(90.00)	4/1/2015	1
TET-15-394	Auger	766,340.00	6,575,860.00	345.00	11.00	-	(90.00)	4/2/2015	1
TET-15-395	Auger	766,340.00	6,575,880.00	342.00	4.70	-	(90.00)	4/6/2015	1
TET-15-396	Auger	766,340.00	6,575,900.00	340.00	2.60	-	(90.00)	4/6/2015	1
TET-15-397	Auger	766,340.00	6,575,920.00	340.00	2.50	-	(90.00)	4/7/2015	1
TET-15-398	Auger	766,340.00	6,575,960.00	336.00	5.30	-	(90.00)	4/8/2015	1
TET-15-399	Auger	766,340.00	6,576,000.00	334.00	6.00	-	(90.00)	4/8/2015	1
TET-15-400	Auger	766,340.00	6,576,040.00	327.00	3.00	-	(90.00)	4/9/2015	1
TET-15-401	Auger	766,050.00	6,576,000.00	327.00	10.80	-	(90.00)	4/10/2015	1
TET-15-402	Auger	766,050.00	6,576,020.00	323.00	9.00	-	(90.00)	4/11/2015	1
TET-15-403	Auger	766,050.00	6,576,040.00	327.00	7.95	-	(90.00)	4/11/2015	1
TET-15-404	Auger	766,050.00	6,576,060.00	325.00	9.50	-	(90.00)	4/13/2015	1
TET-15-405	Auger	766,050.00	6,576,080.00	326.00	10.00	-	(90.00)	4/13/2015	1
TET-15-406	Auger	766,050.00	6,576,100.00	323.00	9.00	-	(90.00)	4/14/2015	1
TET-15-407	Auger	766,050.00	6,576,120.00	322.00	3.00	-	(90.00)	4/15/2015	1
TET-15-408	Auger	766,050.00	6,576,140.00	320.00	2.95	-	(90.00)	4/15/2015	1
TET-15-409	Auger	766,050.00	6,576,160.00	323.00	5.50	-	(90.00)	4/16/2015	1
TET-15-410	Auger	766,050.00	6,576,180.00	323.00	4.85	-	(90.00)	4/16/2015	1
TET-15-411	Auger	766,050.00	6,576,200.00	320.00	4.40	-	(90.00)	4/17/2015	1
TET-15-412	Auger	766,050.00	6,576,220.00	317.00	4.00	-	(90.00)	4/17/2015	1
TET-15-413	Auger	766,050.00	6,576,240.00	316.00	2.40	-	(90.00)	4/21/2015	1
TET-15-414	Auger	766,050.00	6,576,260.00	313.00	2.00	-	(90.00)	4/21/2015	1
TET-15-415	Auger	766,200.00	6,576,220.00	319.00	3.00	-	(90.00)	4/23/2015	1
TET-15-416	Auger	766,200.00	6,576,240.00	319.00	6.90	-	(90.00)	4/23/2015	1
TET-15-417	Auger	766,200.00	6,576,260.00	320.00	3.00	-	(90.00)	4/24/2015	1
TET-15-418	Auger	766,200.00	6,576,280.00	320.00	4.80	-	(90.00)	4/24/2015	1
TET-15-419	Auger	766,200.00	6,576,300.00	330.00	4.30	-	(90.00)	4/25/2015	1
TET-15-420	Auger	766,200.00	6,576,320.00	317.00	6.40	-	(90.00)	4/26/2015	1
TET-15-421	Auger	766,200.00	6,576,340.00	317.00	3.70	-	(90.00)	4/27/2015	1
TET-15-422	Auger	766,200.00	6,576,360.00	315.00	2.60	-	(90.00)	4/27/2015	1
TET-15-423	Auger	766,200.00	6,576,380.00	314.00	3.50	-	(90.00)	4/27/2015	1
TET-15-424	Auger	766,200.00	6,576,400.00	312.00	3.00	-	(90.00)	4/28/2015	1
TET-15-425	Auger	766,200.00	6,576,420.00	309.00	4.00	-	(90.00)	4/28/2015	1
TET-15-426	Auger	769,454.00	6,577,841.00	311.00	5.00	-	(90.00)	4/30/2015	1
TET-15-427	Auger	767,650.00	6,577,018.00	364.00	9.40	-	(90.00)	5/13/2015	1
TET-15-428	Auger	767,650.00	6,577,043.00	360.00	3.00	-	(90.00)	5/13/2015	1

Appendix B

Três Estradas Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
TET-15-429	Auger	767,650.00	6,577,068.00	348.00	2.90	-	(90.00)	5/14/2015	1
TET-15-430	Auger	767,643.00	6,576,893.00	352.00	9.00	-	(90.00)	5/15/2015	1
TET-15-431	Auger	767,650.00	6,576,868.00	344.00	7.00	-	(90.00)	5/18/2015	1
TET-15-432	Auger	767,750.00	6,576,975.00	348.00	8.00	-	(90.00)	5/19/2015	1
TET-15-433	Auger	767,750.00	6,577,000.00	344.00	6.00	-	(90.00)	5/21/2015	1
TET-15-434	Auger	767,750.00	6,577,025.00	349.00	4.00	-	(90.00)	5/21/2015	1
TET-15-435	Auger	767,750.00	6,577,050.00	347.00	4.80	-	(90.00)	5/28/2015	1
TET-15-436	Auger	767,750.00	6,577,075.00	346.00	8.00	-	(90.00)	5/29/2015	1
TET-15-437	Auger	767,750.00	6,577,100.00	345.00	3.30	-	(90.00)	5/29/2015	1
TET-15-438	Auger	767,750.00	6,577,125.00	344.00	7.00	-	(90.00)	6/1/2015	1
TET-15-439	Auger	767,800.00	6,577,125.00	346.00	8.50	-	(90.00)	6/2/2015	1
TET-15-440	Auger	767,800.00	6,577,100.00	350.00	2.50	-	(90.00)	6/2/2015	1
TET-15-441	Auger	767,800.00	6,577,075.00	349.00	6.60	-	(90.00)	6/3/2015	1
TET-15-442	Auger	767,800.00	6,577,050.00	348.00	8.00	-	(90.00)	6/4/2015	1
TET-15-443	Auger	767,800.00	6,577,025.00	348.00	6.70	-	(90.00)	6/12/2015	1
TET-15-444	Auger	767,896.00	6,577,125.00	350.00	6.40	-	(90.00)	6/16/2015	1
TET-15-445	Auger	767,900.00	6,577,150.00	353.00	3.00	-	(90.00)	6/16/2015	1
TET-15-446	Auger	767,900.00	6,577,175.00	348.00	2.00	-	(90.00)	6/17/2015	1
TET-15-447	Auger	768,000.00	6,577,225.00	335.00	8.90	-	(90.00)	6/18/2015	1
TET-15-448	Auger	768,000.00	6,577,140.00	322.00	2.30	-	(90.00)	6/19/2015	1
TET-15-449	Auger	768,000.00	6,577,200.00	337.00	6.95	-	(90.00)	6/19/2015	1
TET-15-450	Auger	768,000.00	6,577,180.00	325.00	1.70	-	(90.00)	6/22/2015	1
TET-15-451	Auger	768,000.00	6,577,160.00	325.00	7.00	-	(90.00)	6/23/2015	1
TET-15-452	Auger	768,000.00	6,577,170.00	325.00	3.00	-	(90.00)	6/23/2015	1
TET-15-453	Auger	768,002.00	6,577,190.00	325.00	4.40	-	(90.00)	6/23/2015	1
TET-15-454	Auger	767,850.00	6,577,090.00	339.00	2.45	-	(90.00)	6/24/2015	1
TET-15-455	Auger	767,850.00	6,577,070.00	338.00	2.90	-	(90.00)	6/24/2015	1
TET-15-456	Auger	767,850.00	6,577,050.00	338.00	2.80	-	(90.00)	6/24/2015	1
TET-15-457	Auger	767,850.00	6,577,030.00	338.00	5.00	-	(90.00)	6/25/2015	1
TET-15-458	Auger	767,850.00	6,577,010.00	338.00	1.70	-	(90.00)	6/25/2015	1
TET-15-459	Auger	767,850.00	6,576,988.29	337.00	3.80	-	(90.00)	6/25/2015	1
TET-15-460	Auger	767,950.00	6,577,060.00	329.00	5.00	-	(90.00)	6/26/2015	1
TET-15-461	Auger	767,950.00	6,577,084.00	329.00	2.20	-	(90.00)	6/29/2015	1
TET-15-462	Auger	767,950.00	6,577,100.00	333.00	3.00	-	(90.00)	6/29/2015	1
TET-15-463	Auger	767,950.00	6,577,123.00	335.00	3.00	-	(90.00)	7/1/2015	1
TET-15-464	Auger	767,950.00	6,577,140.00	337.00	6.70	-	(90.00)	7/1/2015	1
TET-15-465	Auger	767,950.00	6,577,160.00	341.00	9.00	-	(90.00)	7/2/2015	1
TET-15-466	Auger	767,900.00	6,577,105.00	340.00	2.00	-	(90.00)	7/3/2015	1
TET-15-467	Auger	767,900.00	6,577,085.00	338.00	4.80	-	(90.00)	7/3/2015	1
TET-15-468	Auger	767,900.00	6,577,065.00	333.00	3.50	-	(90.00)	7/4/2015	1
TET-15-469	Auger	767,900.00	6,577,045.00	330.00	3.00	-	(90.00)	7/4/2015	1
TET-15-470	Auger	768,050.00	6,577,156.00	326.00	3.00	-	(90.00)	7/6/2015	1
TET-15-471	Auger	768,050.00	6,577,182.00	326.00	3.00	-	(90.00)	7/6/2015	1
TET-15-472	Auger	768,050.00	6,577,202.00	325.00	3.00	-	(90.00)	7/7/2015	1
TET-15-473	Auger	768,050.00	6,577,226.00	323.00	1.50	-	(90.00)	7/7/2015	1
TET-15-474	Auger	768,050.00	6,577,242.00	325.00	3.55	-	(90.00)	7/7/2015	1
TET-15-475	Auger	767,850.00	6,577,109.00	347.00	2.45	-	(90.00)	7/9/2015	1
TET-15-476	Auger	767,900.00	6,577,025.00	330.00	1.60	-	(90.00)	7/9/2015	1
TET-15-477	Auger	767,900.00	6,577,005.00	333.00	4.00	-	(90.00)	7/9/2015	1
TET-15-478	Auger	767,950.00	6,577,180.00	343.00	4.80	-	(90.00)	7/10/2015	1
TET-15-479	Auger	767,950.00	6,577,200.00	341.00	4.30	-	(90.00)	7/10/2015	1
TET-15-480	Auger	767,850.00	6,577,080.00	346.00	4.00	-	(90.00)	7/14/2015	1
TET-15-481	Auger	767,850.00	6,577,060.00	344.00	3.00	-	(90.00)	7/14/2015	1
TET-15-482	Auger	767,850.00	6,577,040.00	344.00	3.40	-	(90.00)	4/14/2015	1
TET-15-483	Auger	767,850.00	6,577,020.00	344.00	2.90	-	(90.00)	7/15/2015	1
TET-15-484	Auger	767,850.00	6,577,000.00	344.00	1.75	-	(90.00)	7/15/2015	1
TET-15-485	Auger	767,850.00	6,577,100.00	350.00	8.00	-	(90.00)	7/15/2015	1
TET-15-486	Auger	767,950.00	6,577,113.00	332.00	6.00	-	(90.00)	7/16/2015	1
TET-15-487	Auger	767,950.00	6,577,132.00	337.00	4.90	-	(90.00)	7/16/2015	1

Coordinates: UTM SAD69 Zone 21S

Joca Tavares Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
JTD-15-001	Core	234,201.61	6,566,800.85	257.83	52.05	0.00	-90.00	10/9/2015	55
JTD-15-002	Core	234,201.17	6,566,751.75	254.88	70.20	0.00	-90.00	10/14/2015	66
JTD-15-003	Core	234,154.45	6,566,776.73	257.24	50.15	0.00	-90.00	10/22/2015	63
JTD-15-004	Core	234,205.14	6,566,850.66	257.22	80.10	0.00	-90.00	10/19/2015	85
JTD-15-005	Core	234,254.75	6,566,945.26	248.37	165.35	180.00	-50.00	10/28/2015	19
JTD-15-006	Core	234,253.28	6,566,777.44	255.71	60.10	0.00	-90.00	10/28/2015	54
JTD-15-007	Core	234,154.53	6,566,664.80	244.83	110.30	0.00	-50.00	11/2/2015	5
JTD-15-008	Core	234,252.35	6,566,874.69	253.38	71.05	0.00	-90.00	10/31/2015	75
JTD-15-009	Core	234,350.90	6,566,817.60	240.70	61.60	180.00	-50.00	11/5/2015	42
JTD-15-010	Core	234,254.60	6,566,814.41	254.33	110.00	0.00	-50.00	11/6/2015	77
JTD-15-011	Core	234,302.21	6,566,803.51	252.74	59.30	0.00	-90.00	11/11/2015	57
JTD-15-012	Core	234,156.13	6,566,819.66	258.83	90.00	180.00	-50.00	11/10/2015	84
JTD-15-013	Core	234,157.20	6,566,730.40	253.31	40.00	0.00	-90.00	11/11/2015	43
JTD-15-014	Core	234,256.07	6,566,727.41	252.63	41.00	0.00	-90.00	11/12/2015	38
JTD-15-015	Core	234,308.89	6,566,856.44	243.95	46.00	0.00	-90.00	11/16/2015	32
JTD-15-016	Core	234,302.34	6,566,754.73	256.05	44.50	0.00	-90.00	11/16/2015	47
JTD-15-017	Core	234,107.45	6,566,854.49	261.08	37.00	0.00	-90.00	11/16/2015	40
JTD-15-018	Core	234,355.97	6,566,772.27	244.86	34.30	0.00	-90.00	11/17/2015	31
JTD-15-019	Core	234,155.07	6,566,880.08	261.74	20.60	0.00	-90.00	11/17/2015	22
JTD-15-020	Core	234,341.49	6,566,887.53	238.24	46.10	0.00	-90.00	11/18/2015	46
JTD-15-021	Core	234,202.98	6,566,904.76	256.18	30.00	0.00	-90.00	11/18/2015	31
JTD-15-022	Core	234,359.22	6,566,703.12	241.40	17.70	0.00	-90.00	11/18/2015	8
JTD-15-023	Core	234,354.23	6,566,730.71	244.75	31.00	0.00	-90.00	11/19/2015	19
JTD-15-024	Core	234,301.05	6,566,909.58	247.94	25.50	0.00	-90.00	11/19/2015	28
JTD-15-025	Core	234,307.84	6,566,707.17	250.94	135.40	0.00	-55.00	11/25/2015	14
JTD-15-026	Core	234,405.24	6,566,704.20	237.73	22.30	0.00	-90.00	11/20/2015	17
JTD-15-027	Core	234,405.72	6,566,755.72	235.52	34.30	0.00	-90.00	11/21/2015	32
JTD-15-028	Core	234,250.40	6,566,920.53	252.74	31.00	0.00	-90.00	11/23/2015	35
JTD-15-029	Core	234,125.88	6,566,708.21	248.71	46.00	0.00	-90.00	11/24/2015	48
JTD-15-030	Core	234,106.66	6,566,755.40	255.66	36.00	0.00	-90.00	11/25/2015	33
JTD-15-031	Core	234,112.22	6,566,806.31	259.49	23.00	0.00	-90.00	11/26/2015	20
JTD-15-032	Core	234,205.03	6,566,726.21	252.88	37.00	0.00	-90.00	11/27/2015	39
JTD-15-033	Core	234,400.78	6,566,842.30	228.98	22.30	0.00	-90.00	11/26/2015	19
JTD-15-034	Core	234,405.49	6,566,803.01	230.34	15.30	0.00	-90.00	11/27/2015	16
JTD-15-035	Core	234,201.80	6,566,838.05	257.58	80.30	180.00	-70.00	12/3/2015	76
JTD-15-036	Core	234,202.72	6,566,877.30	257.87	45.70	0.00	-90.00	12/2/2015	56
JTD-15-037	Core	234,193.78	6,566,430.12	242.75	153.50	25.00	-50.00	12/7/2015	114
JTD-15-038	Core	233,980.97	6,566,528.54	226.50	103.40	25.00	-50.00	12/9/2015	62
JTD-15-039	Core	234,483.60	6,566,792.14	231.63	51.30	125.00	-50.00	12/5/2015	38
JTD-15-040	Core	234,117.66	6,566,490.09	233.06	50.10	20.00	-50.00	12/8/2015	54
JTT-13-001	Auger	234,200.00	6,566,925.00	253.66	4.50	0.00	-90.00	5/24/2013	5
JTT-13-002	Auger	234,202.00	6,566,874.00	257.82	6.40	0.00	-90.00	5/24/2013	7
JTT-13-003	Auger	234,195.00	6,566,824.00	258.17	14.70	0.00	-90.00	5/27/2012	15
JTT-13-004	Auger	234,200.00	6,566,775.00	256.07	5.50	0.00	-90.00	5/28/2013	6
JTT-13-005	Auger	234,300.00	6,566,775.00	255.68	3.50	0.00	-90.00	5/28/2013	3
JTT-13-006	Auger	234,294.00	6,566,829.00	252.90	2.00	0.00	-90.00	6/3/2013	2
JTT-13-007	Auger	234,300.00	6,566,728.00	254.44	2.80	0.00	-90.00	6/4/2013	3
JTT-13-008	Auger	234,300.00	6,566,675.00	244.86	3.50	0.00	-90.00	6/4/2013	4
JTT-13-009	Auger	234,300.00	6,566,877.00	245.86	10.00	0.00	-90.00	6/5/2013	10
JTT-13-010	Auger	234,400.00	6,566,828.00	230.35	4.50	0.00	-90.00	6/6/2013	5
JTT-13-011	Auger	234,400.00	6,566,775.00	235.28	6.00	0.00	-90.00	6/6/2013	6
JTT-13-012	Auger	234,400.00	6,566,725.00	241.93	3.40	0.00	-90.00	6/7/2013	4
JTT-13-013	Auger	234,400.00	6,566,675.00	235.54	2.60	0.00	-90.00	6/7/2013	3
JTT-13-014	Auger	234,448.00	6,566,725.00	237.75	3.20	0.00	-90.00	6/8/2013	4
JTT-13-015	Auger	234,450.00	6,566,700.00	232.42	4.00	0.00	-90.00	6/10/2013	4
JTT-13-016	Auger	234,100.00	6,566,845.00	261.17	9.00	0.00	-90.00	6/12/2013	9
JTT-13-017	Auger	234,103.00	6,566,800.00	258.97	2.80	0.00	-90.00	6/12/2013	3
JTT-13-018	Auger	234,100.00	6,566,750.00	254.28	4.60	0.00	-90.00	6/13/2013	5
JTT-13-019	Auger	234,100.00	6,566,705.00	247.32	6.00	0.00	-90.00	6/13/2013	6
JTT-13-020	Auger	234,400.00	6,566,640.00	232.35	4.00	0.00	-90.00	6/14/2013	4
JTT-13-021	Auger	234,400.00	6,566,875.00	226.98	5.00	0.00	-90.00	6/14/2013	5
JTT-13-022	Auger	234,196.00	6,566,728.00	253.48	6.00	0.00	-90.00	6/17/2013	6
JTT-13-023	Auger	234,198.00	6,566,677.00	247.99	4.60	0.00	-90.00	6/18/2013	5
JTT-13-024	Auger	234,300.00	6,566,627.00	244.11	3.00	0.00	-90.00	6/18/2013	3

Joca Tavares Drill Hole Summary									
Drill Hole ID	Type	Easting	Northing	Elevation	Depth	Azimuth	Dip	Completion Date	Samples
JTT-13-025	Auger	234,301.00	6,566,952.00	246.80	8.00	0.00	-90.00	6/19/2013	8
JTT-13-026	Auger	234,197.00	6,566,902.00	256.23	3.80	0.00	-90.00	6/19/2013	4
JTT-13-027	Auger	234,298.00	6,566,907.00	248.25	5.00	0.00	-90.00	6/20/2013	5
JTT-13-028	Auger	234,300.00	6,566,925.00	247.90	5.50	0.00	-90.00	6/24/2013	6
JTT-13-029	Auger	234,200.00	6,566,700.00	250.48	6.00	0.00	-90.00	6/27/2013	6
JTT-13-030	Auger	234,400.00	6,566,850.00	227.38	3.70	0.00	-90.00	6/28/2013	4
JTT-13-031	Auger	234,428.00	6,566,683.00	233.92	2.00	0.00	-90.00	6/28/2013	2
JTT-13-032	Auger	234,260.00	6,566,640.00	245.63	5.00	0.00	-90.00	6/28/2013	5
JTT-13-033	Auger	234,250.00	6,566,700.00	249.81	2.60	0.00	-90.00	6/29/2013	3
JTT-13-034	Auger	234,200.00	6,566,500.00	243.02	3.30	0.00	-90.00	7/1/2013	2
JTT-13-035	Auger	234,100.00	6,566,675.00	242.97	4.00	0.00	-90.00	7/1/2013	4
JTT-13-036	Auger	234,095.00	6,566,530.00	242.80	2.30	0.00	-90.00	7/2/2013	3
JTT-13-037	Auger	234,000.00	6,566,625.00	233.10	5.00	0.00	-90.00	7/2/2013	5
JTT-13-038	Auger	234,000.00	6,566,573.00	240.01	1.30	0.00	-90.00	7/2/2013	2
JTT-13-039	Auger	234,000.00	6,566,525.00	229.88	3.90	0.00	-90.00	7/3/2013	4
JTT-13-040	Auger	234,000.00	6,566,225.00	229.00	2.90	0.00	-90.00	7/4/2013	3
JTT-13-041	Auger	234,100.00	6,566,275.00	237.00	4.00	0.00	-90.00	7/4/2013	4
JTT-13-042	Auger	234,352.00	6,566,918.00	240.51	7.00	0.00	-90.00	11/18/2013	7
JTT-13-043	Auger	234,352.00	6,566,674.00	238.86	5.00	0.00	-90.00	11/19/2013	5
JTT-13-044	Auger	234,142.00	6,566,886.00	259.64	2.00	0.00	-90.00	11/19/2013	2
JTT-13-045	Auger	234,257.00	6,566,925.00	251.90	3.00	0.00	-90.00	11/20/2013	3
JTT-13-046	Auger	234,101.00	6,566,590.00	243.80	4.50	0.00	-90.00	11/20/2013	5
JTT-13-047	Auger	234,098.00	6,566,885.00	261.33	3.00	0.00	-90.00	11/21/2013	3
JTT-13-048	Auger	234,050.00	6,566,845.00	257.40	5.00	0.00	-90.00	11/21/2013	5
JTT-13-049	Auger	234,050.00	6,566,800.00	251.21	3.00	0.00	-90.00	11/22/2013	3
JTT-13-050	Auger	234,040.00	6,566,748.00	247.00	2.00	0.00	-90.00	11/22/2013	2
JTT-13-051	Auger	234,149.00	6,566,703.00	250.94	5.50	0.00	-90.00	11/22/2013	6
JTT-13-052	Auger	234,024.00	6,566,677.00	240.37	3.50	0.00	-90.00	11/23/2013	4
JTT-13-053	Auger	233,798.00	6,566,149.00	231.00	3.00	0.00	-90.00	11/25/2013	3
JTT-13-054	Auger	233,798.00	6,566,215.00	227.00	3.00	0.00	-90.00	11/25/2013	3
JTT-13-055	Auger	233,709.00	6,566,244.00	241.00	3.00	0.00	-90.00	11/25/2013	3
JTT-13-056	Auger	233,709.00	6,566,184.00	241.00	3.80	0.00	-90.00	11/26/2013	4
JTT-13-057	Auger	233,709.00	6,566,124.00	235.00	2.00	0.00	-90.00	11/26/2013	2
JTT-13-058	Auger	233,705.00	6,566,062.00	236.00	2.80	0.00	-90.00	11/26/2013	3
JTT-13-059	Auger	233,600.00	6,566,062.00	246.00	3.00	0.00	-90.00	11/26/2013	3
JTT-13-060	Auger	233,600.00	6,566,125.00	245.00	3.50	0.00	-90.00	11/27/2013	4
JTT-13-061	Auger	233,600.00	6,566,177.00	239.00	3.00	0.00	-90.00	11/27/2013	3
JTT-13-062	Auger	233,498.00	6,566,165.00	237.00	3.00	0.00	-90.00	11/27/2013	3
JTT-13-063	Auger	233,499.00	6,566,077.00	248.00	3.00	0.00	-90.00	11/28/2013	3
JTT-13-064	Auger	233,400.00	6,566,075.00	252.00	3.80	0.00	-90.00	11/28/2013	4
JTT-13-065	Auger	233,400.00	6,566,175.00	246.00	3.50	0.00	-90.00	11/28/2013	4
JTT-13-066	Auger	234,149.00	6,566,678.00	246.94	3.70	0.00	-90.00	11/29/2013	4
JTT-13-067	Auger	234,080.00	6,566,750.00	248.91	3.80	0.00	-90.00	11/29/2013	4
JTT-13-068	Auger	234,083.00	6,566,800.00	257.36	3.90	0.00	-90.00	12/2/2013	4
JTT-13-069	Auger	234,080.00	6,566,845.00	259.96	2.50	0.00	-90.00	12/2/2013	3
JTT-13-070	Auger	234,078.00	6,566,885.00	261.25	2.40	0.00	-90.00	12/3/2013	2
JTT-13-071	Auger	234,098.00	6,566,910.00	260.57	4.00	0.00	-90.00	12/3/2013	4
JTT-13-072	Auger	234,142.00	6,566,911.00	254.11	4.80	0.00	-90.00	12/4/2013	5
JTT-13-073	Auger	234,257.00	6,566,950.00	247.67	6.00	0.00	-90.00	12/4/2013	6
JTT-13-074	Auger	233,346.00	6,566,095.00	257.00	7.40	0.00	-90.00	12/5/2013	8
JTT-13-075	Auger	233,344.00	6,566,026.00	256.00	3.00	0.00	-90.00	12/5/2013	3
JTT-13-076	Auger	234,503.00	6,566,785.00	231.74	4.90	0.00	-90.00	12/6/2013	5
JTT-13-077	Auger	234,442.00	6,566,829.00	225.83	3.00	0.00	-90.00	12/7/2013	3
JTT-13-078	Auger	234,428.00	6,566,779.00	233.08	2.90	0.00	-90.00	12/7/2013	3
JTT-13-079	Auger	234,196.00	6,566,229.00	254.00	2.50	0.00	-90.00	12/9/2013	3
JTT-13-080	Auger	234,001.00	6,566,325.00	238.00	2.00	0.00	-90.00	12/9/2013	2
JTT-13-081	Auger	234,000.00	6,566,425.00	223.39	2.00	0.00	-90.00	12/9/2013	2
JTT-13-082	Auger	234,430.00	6,566,840.00	226.24	3.00	0.00	-90.00	12/10/2013	3
JTT-13-083	Auger	234,390.00	6,566,813.00	233.96	5.00	0.00	-90.00	12/10/2013	5
JTT-13-084	Auger	234,352.00	6,566,893.00	237.33	2.00	0.00	-90.00	12/11/2013	2

Coordinates: UTM SAD69 Zone 22S