

# **NI 43-101 Technical Report on Resources**

## **Cajueiro Project**

### **States of Mato Grosso and Para, Brazil**

**Prepared for:**



**ECI Exploration and Mining Inc.**  
Suite 1650 – 409 Granville Street  
Vancouver, British Columbia  
V6C 1T2

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**Prepared by:**



274 Union Boulevard, Suite 450  
Lakewood, CO 80228

**Qualified Persons:**

M. Claiborne Newton, III, PhD, CPG  
Donald E. Hulse, P.E.

# 1 Summary (Item 1)

Gustavson Associates, LLC (Gustavson) was commissioned by ECI Exploration and Mining Inc. (ECI) to estimate and report mineral resources for the Cajueiro Project located in the states of Mato Grosso and Para, Brazil (Site). The name "ECI" shall include ECI Exploration and Mining Inc., as well as its Brazilian subsidiary, Electrum Capital Pesquisa de Recursos Minerais Ltda, and includes its former name, Electrum Capital, Inc. Mineral resources were previously estimated by Gustavson using assay data from eight holes drilled by ECI in the Crente target zone and presented in a Canadian National Instrument 43-101 (NI 43-101) Technical Report on Resources dated September 13, 2011. Since then, ECI has drilled and assayed 42 additional holes, and it has acquired the data for 13 drill holes completed by Chapleau Mineral Exploration Limited (Chapleau). The purpose of this report is to present the mineral resource estimate completed with updated data available since September 13, 2011 in accordance with NI 43-101 Standards of Disclosure for Mineral Projects and Canadian Institute of Mining, Metallurgy and Petroleum (CIM) "Best Practices and Reporting Guidelines."

As of the report date, ECI is not listed in the Toronto Stock Exchange. Nevertheless, we understand that this report is intended to be filed on Canadian Securities Administrators' System for Electronic Document Analysis and Retrieval (SEDAR).

## 1.1 Property Description and Location

The Cajueiro project area is located in the Juruena Gold Province in central Brazil, within the states of Para and Mato Grosso. The Teles Pires River runs through the project area. The project area is geographically centered at approximately N8,965,000 meters, E550,000 meters, UTM Zone 21L, WGS84.

The Cajueiro project area is 53,136 hectares, consisting of 35,444 hectares which are permitted by the Brazilian national government's Departamento Nacional de Produção Mineral (DNPM) for exploration and/or mining, and 17,693 hectares that are in review by DNPM for exploration permits. ECI applied for seven additional exploration permits between 2010 and 2012: these permit applications are under review by DNPM, and exploration may occur in these areas once the permits are granted. Based on information provided by ECI on March 2, 2013, all claims are in good standing with DNPM. Production from three of the DNPM permit areas (866.070/2004, 866.933/2012 and 850.224/2009) are subject to 1% net smelter royalty.

Historical mining activities have resulted in several pits that have filled with water. In the project environmental permit, environmental impacts of the historically mined areas are stated to be well mitigated. Specifically, erosion and sedimentation are being managed

by natural vegetation in the drainage, waste, and pit areas. No required reclamation requirements for the historically mined areas are identified in the environmental permit.

Gustavson reviewed environmental permits for exploration and mining evaluation for two areas: DNPM Permit Nos. 866.160/2007 and 866.070/2004. ECI's past and foreseeable exploration and drilling are in areas that are not covered by DNPM Permit Nos. 866.160/2007 and 866.070/2004. Gustavson recommends that ECI obtain environmental permits for those areas it plans to explore and drill.

## **1.2 Ownership**

Farms owned by Alvaro Tavares and Ricardo Cardoso cover areas that are anticipated for future exploration. Formal agreements are in place for exploration in both areas.

## **1.3 Geology and Mineralization**

The Cajueiro project area lies on the Amazon Craton. The main lithologies of this region are known as the São Pedro and Juruena Intrusive Suite, Paranaita Intrusive Suite, Nhandu Granites, Colider Volcanic Suite, Teles Pires Intrusive Suite and Beneficente Group - the extensive sedimentary platform which forms the hills of the Serra do Cachimbo. The Cajueiro Project is located in the area known as the Juruena Arc, which is Proterozoic in age (1.75 Ga-1.85 Ga). The arc has a NW-SE structural trend and is composed of two crustal segments, granitic-volcanic and medium to high grade metamorphic rocks.

Within the granite-volcanic group, rocks of a potassic, calc-alkaline magmatism are monzonites and granites of the Teles Pires Suite and the Paranaita Suite. These are associated with acid and intermediate volcanics of the Colider Suite, in which rhyolites, rhyodacites, andesites and microgranites predominate.

Colider Suite rocks have been mapped in the Cajueiro project area and dominantly consist of microgranite and rhyolite. Zones of hydrothermal alteration with sericite alteration have been recognized on surface within the granites and are commonly coincident with fracture zones. Four main structural trends have been identified in the area: NE-SW, NW-SE, E-W and NNW-SSE, which control the location and orientation of drainages. Previous artisanal mining in these drainages has exploited the alteration zones producing high grade gold from the saprolitic material. Localized gossanous boulders are also mapped over the areas of mineralized fracture zones. Garimpeiros have mined alluvial or placer gold in many drainages which likely overlie or are adjacent to bedrock mineralized zones.

Four discrete target areas have been identified in the central portion of the Cajueiro project: Marines, Baldo, Matrincha, and Crente. In these areas, two variations of the

felsic rocks are present: 1) reddish microgranite/rhyolite with negligible quartz veining or pyrite, and 2) green microgranite/rhyolite, hydrothermally altered with sericite, epidote, chlorite and quartz with abundant quartz veining and pyrite. The green microgranitic/rhyolitic rocks contain gold mineralization. The hydrothermal alteration zones vary in width from 1 to 50 meters and are easily identified due to the strong color change from red in unaltered granite/rhyolite to green in the altered zones. Gold primarily occurs in the form of fine native gold and is also associated with pyrite.

## **1.4 Exploration Status**

### **1.4.1 Trench Sampling**

In 2011, ECI conducted trench sampling in 10 locations and collected 334 samples. Trench samples generally were identified as saprolite with quartz fragments. Based on review of assay data, the saprolite is gold-bearing and generally located within the target areas in the Cajueiro property. As described by ECI, "All trench and rock samples were collected in possible mineralized outcrops and zones."

### **1.4.2 Rock Sampling**

ECI has provided Gustavson with the gold assay results for 304 rock samples.

### **1.4.3 Geophysical Survey**

In July 2011, on behalf of ECI, Lasa Prospecções S.A., the Brazilian subsidiary of Fugro Airborne Surveys, conducted airborne magnetic and radiometric surveys of the Cajueiro project area.

Aeromagnetic surveying has proven useful for highlighting structural trends of magnetic dike-filled fractures which also channeled gold-bearing hydrothermal fluids.

### **1.4.4 Drilling**

ECI has provided Gustavson with drilling data for 13 historical drill holes completed by Chapleau and 42 drill holes completed by ECI. Observations from drilling and exploration activities to date have identified two gold-bearing zones: a surficial weathered saprolitic layer, underlain by competent unweathered bedrock. For the purpose of this section, the "saprolite" layer is the overlying weathered rock layer, underlain by unweathered bedrock. The saprolite layer ranges in thickness from 0 to approximately 40 meters.

Gustavson concludes the drilling data are acceptable for use in resource estimation.

## 1.5 Metallurgy and Processing

Metallurgical testing has been completed for four rhyolite unweathered bedrock samples from the Crente target area. The head grades of the four samples approximate the grade in the resource estimates for all four target areas, as shown in Table 14-12. Gustavson concludes that the samples are representative for this stage of the study.

Samples were ground to particle size with 80% passing rate (P80) of 150 and 75 microns, followed by gravity gold recovery, and cyanide leaching for gold. Overall recoveries ranged from 85% to 96%. Gustavson recommends reagent consumption be reported for all future metallurgical testing.

## 1.6 Mineral Resource Estimate

Observations from drilling and exploration activities to date have identified two gold-bearing zones: a surficial weathered saprolitic layer, underlain by competent unweathered bedrock. For the purpose of this section, the “saprolite” layer is the overlying weathered rock layer, underlain by unweathered bedrock. Gustavson has estimated the gold resource in the surficial saprolite separately from the resources in the underlying bedrock.

Drilling in the Cajueiro project used in modeling consists of 48 drill holes in 4 target areas (Crente, Baldo, Matrincha, and Marines) which Gustavson believes provide sufficient data on which to base an indicated and inferred mineral resource estimate in the unweathered bedrock zone. For the saprolite zone, drill hole data that intersect the saprolite plus rock and trench sample data were utilized for the mineral resource estimate. Gustavson believes these data are sufficient for an inferred estimate within the saprolite zone.

The database used for resource estimation contains 48 core holes, 51 surface rock samples, and 187 trench samples that fall with assay values that fall within the four target areas. All block models use blocks that are 10 meters along strike, 5 meters normal to the structure, and 3 meters high. Samples were composited at 3 meters. Gold was capped at 10 g/t in the Crente target area unweathered bedrock, and at 5 g/t in saprolite at Crente and in unweathered bedrock and saprolite for the other three target areas.

The anomalous gold values recorded in both narrow and wide alteration zones indicate that there are narrow higher grade fracture zones with an irregular, lower-grade selvage in the microgranite/rhyolite. Both styles of mineralization are discontinuous and were accounted for by using a probabilistic single indicator estimation methodology.