



# EMGOLD MINING CORPORATION

## TECHNICAL REPORT

### 16.0 MINERAL PROCESSING & METALLURGICAL TESTING

There exists extensive background information on the metallurgical performance of the ores processed at the Idaho-Maryland and Brunswick properties. On each property was a milling circuit that incorporated crushing, grinding, gravity, sulfide flotation, and gold smelting/refining unit operations. In addition, the Idaho-Maryland mill contained a cyanidation plant with Merrill-Crowe recovery, and a smelting/refining circuit that treated flotation concentrates and sands from both mills. No milling facilities remain from past operations.

#### 16.1 Metallurgical Performance

AMEC reviewed the mill operating statistics for 1934, 1936, 1937, 1938, 1941, and 1947. Results indicate stable overall gold recoveries and metallurgical response to gravity, flotation, and cyanidation:

- Overall gold recoveries ranged from 93.8% to 97.2%.
- Gold production using gravity recovery methods ranged from 61% to 69%, averaging approximately 65.4%.
- The ore contains approximately 1.5% to 2% sulfides. Gold produced via flotation of the sulfides ranged from 30.3% to 36.9% with an average of 33.4%.

Following flotation, the concentrate was reground to further liberate the gold. The remaining 1.2% of the total gold produced was achieved by treating the sands or coarse fraction from the flotation circuit tailings using cyanidation.

Graphite and scheelite containing ore zones have been encountered in the orebody. In the milling circuit, graphite reported to the flotation circuit and was successfully depressed using flotation reagents. Scheelite was recovered using gravity and flotation methods in the 1950s.

Overall gold recovery using modern technology will result in gold recoveries consistent with those achieved in the early milling circuits at the Idaho-Maryland mill. However, it can be expected that gold recovery using current gravitational equipment may exceed the recoveries attained (i.e., average 65%) in the 1930s and 1940s. Testwork to determine the maximum gold recovery potential using gravity separation and concentration is recommended.