

38: Expanded metal mesh riffles – 1980s research in Canada



Figure 81. EXPANDED METAL MESH RIFFLES
 Raised expanded metal mesh suitable for using as small expanded metal riffles. (photo: Robin Grayson)

Expanded metal mesh seems to have been used for riffles a little later than grating. It was only in the 1980s the effectiveness of mesh was proved by scientific tests.

1980s tests in British Columbia, Canada

James Hamilton and George Poling [7] tested 1-10H expanded metal mesh. The mesh is 'Raised (R) = Standard (S)', not 'Flattened (F)'.

The riffles are 1-10H raised expanded metal mesh identical to the 1-10H expanded metal mesh manufactured by Continental Wire Cloth Inc of Calgary. Their product 1-10H has not changed since the early 1980s according to Vincent Ruth, see: www.cwcloth.com/expanded.htm.

Of concern is the susceptibility of 1-10H mesh to lose gold by the mesh warping to permit scouring of the matting beneath. Even a small surge is likely to cause gold losses for, as pointed out by Randy Clarkson and Owen Peer [8] the live sorting crescent is so shallow it is vulnerable to being ejected. The cause of scouring is due to the ease of warping of the mesh, plus two variables:

- ⊗ a surge of water, due to too much or too little water; and/or
- ⊗ a surge of changed slurry, due to too much or too little solids.

Operation

To comply with the University of British Columbia tests, the sluice is tilted at 50 to 106cm per 4-m length to ensure the mesh can generate many small and distinct vortices.

First, a roll of unbacked Nomad™ matting is cut to size and unrolled on the floor of the sluice box. If several pieces of matting are used then their ends are closely butted together to avoid a 'step'. Instinctively the Nomad™ matting is laid with its smooth side downwards, but there is recent anecdotal evidence that putting the smooth side uppermost either makes no difference or is slightly better (source – *Zooka of Alaska Gold Forum*).

A roll of raised expanded metal mesh type 1-10H is unrolled and cut to fit the sluice box, and secured by metal or wooden chocks. Several sections may be butted together with no overlap. Each equates to a 'riffle set'. The mesh is inserted with the raised lips facing upstream to serve as riffles.

When unrolling the mesh, flatten it. Keep the sluice narrow to reduce warping. Clamping too tight may compress the Nomad™ matting and warp the mesh. Tying the mesh to the floor of the sluice-box inhibits warping but prolongs cleanups; quick release bolts are better.

Expanded metal riffles achieve a very large concentration ratio (i.e. shed vast amounts of black sand to achieve a gold-rich concentrate), as do flat bar riffles and angle iron (Hungarian) riffles.

Expanded metal 1-10H mesh can maintain the captured black sand in a loose state for a long time, so continuing to be able to recover gold. This enables cleanups to be needed only once every 24 hours.

Adoption by placer gold miners

Expanded metal riffles of mesh are popular worldwide amongst placer gold miners.

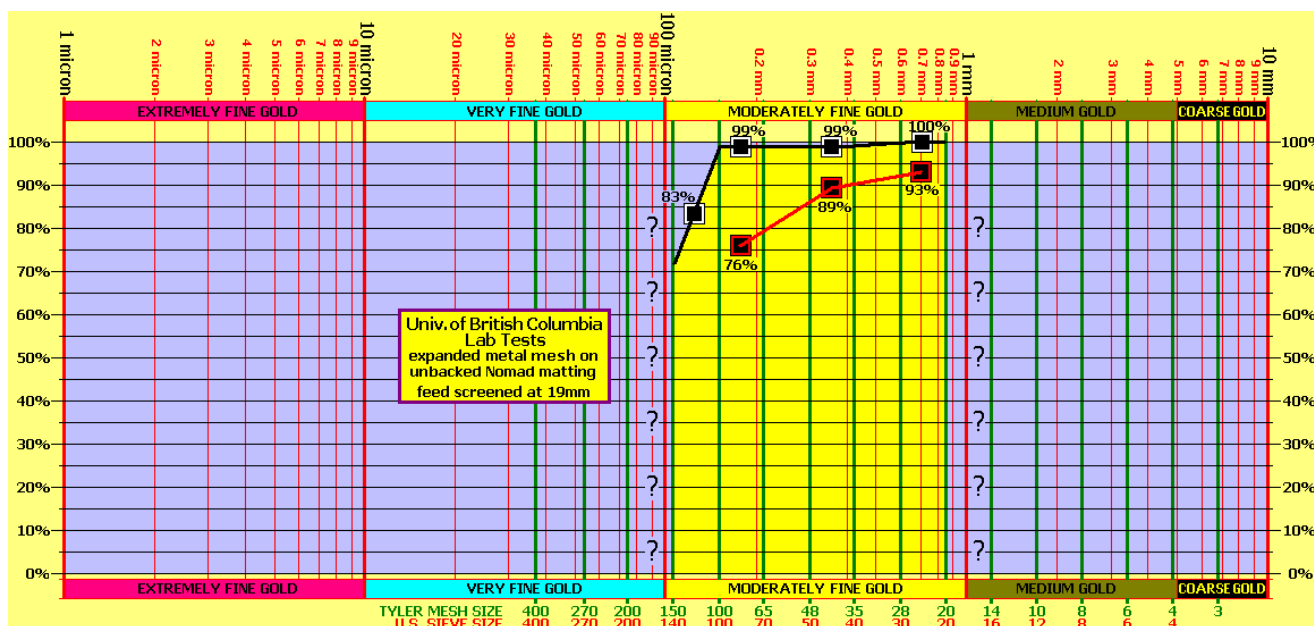


Figure 82. GOLD RECOVERY BY RAISED EXPANDED METAL MESH ON UNBACKED NOMAD MATTING – B.C. tests
 Recovery of placer gold by expanded metal mesh, type 1-10H on unbacked Nomad™ matting. (compiler: Robin Grayson from Poling and Hamilton [7])

38 continued: Expanded metal mesh riffles –research in Canada and USA

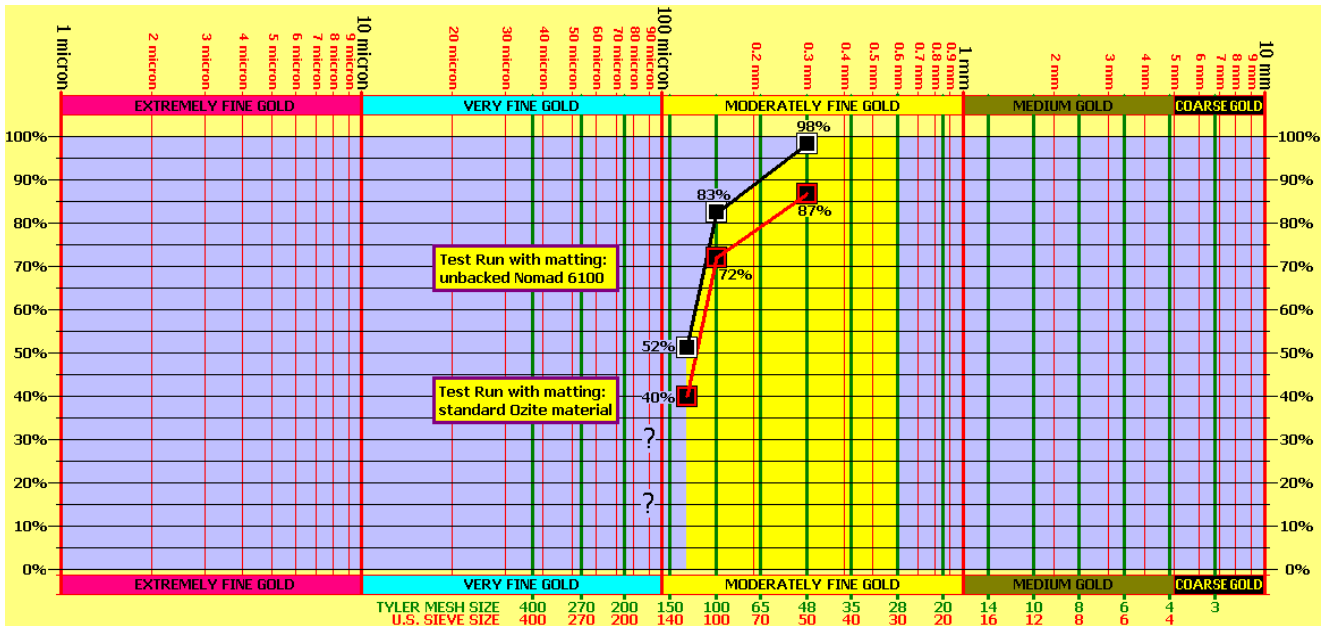


Figure 83. GOLD RECOVERY BY SMALL SLUICE WITH DIFFERENT MATTING – Zooka Tests
The superiority of Nomad™ matting in recovering placer gold compared to close weave matting. (compiler: Robin Grayson)

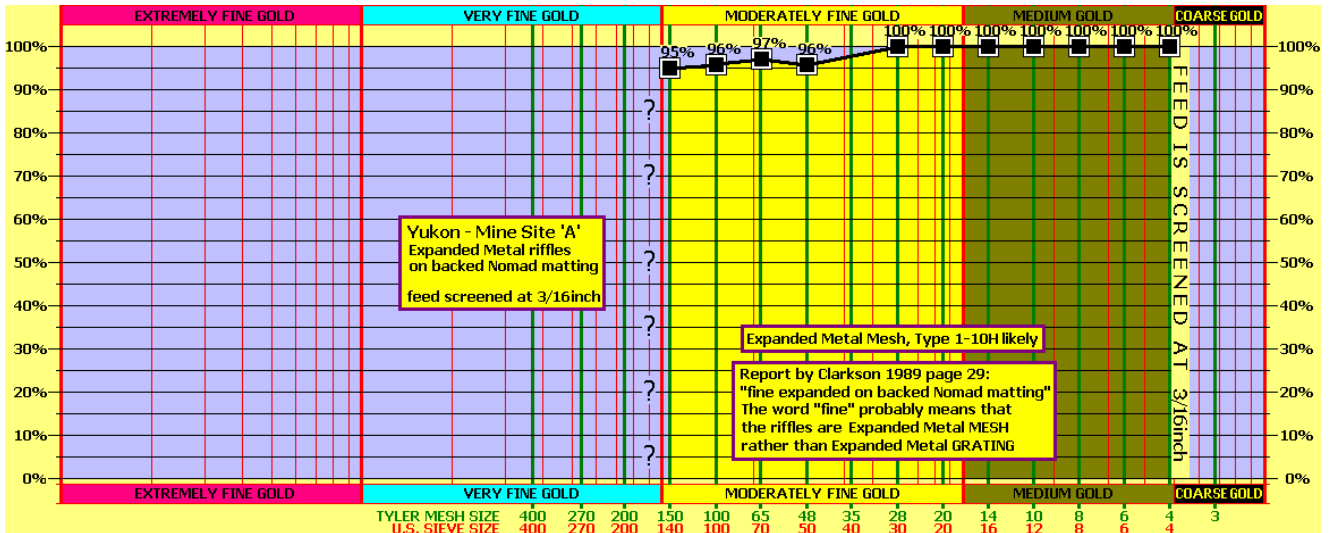


Figure 84. GOLD RECOVERY BY RAISED EXPANDED METAL MESH ON BACKED NOMAD MATTING – Yukon tests
Recovery by expanded metal mesh (type 1-10H ?) on backed Nomad™ matting. (compiler: Robin Grayson from Clarkson 1989 [86])

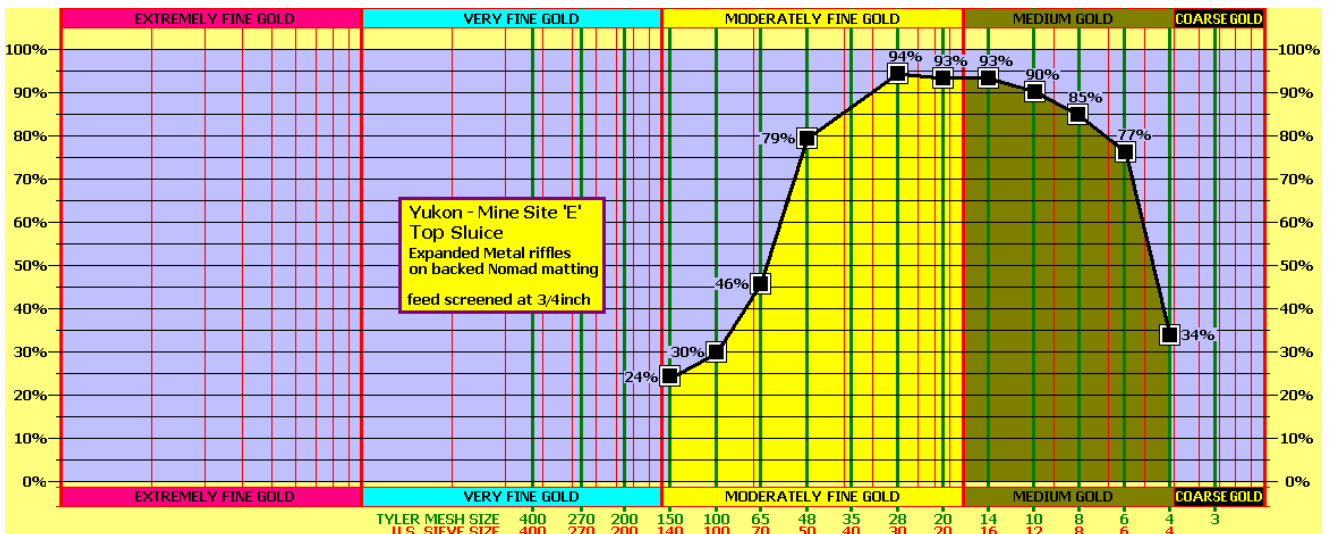


Figure 85. GOLD RECOVERY BY RAISED EXPANDED METAL MESH ON BACKED NOMAD MATTING – Yukon tests
Inability of expanded metal mesh (type 1-10H?) to retain medium-coarse placer gold. (compiler: Robin Grayson from Clarkson 1989 [86])