We present a numerical method for the detection and estimation of perfectly conducting inclusions in conducting homogeneous host media \( \Omega \). The estimation is based on the evaluation of an indicator function that depends on a single pair of Cauchy data (electric potential and current) given at the boundary of the medium. The indicator function is derived using Green’s third identity with the fundamental solution for the Dirichlet Laplacian on the unit disc. Using a truncated Taylor expansion, the indicator function is expressed in terms of an integral over a perturbed inclusion boundary, resulting in a natural physical interpretation. The method is implemented numerically, tested on different example problems and compared to a decomposition approach based on the method of fundamental solutions. The method shows promising results and seems robust to noisy, low sampling-frequency data.