39. (a) Using Eq. 27-10, we find

$$E = \rho J = \frac{\rho i}{A} = \frac{(1.62 \times 10^{-8}\,\Omega\cdot\text{m})(100\,\text{A})}{5.00 \times 10^{-6}\,\text{m}^2} = 0.324\ \text{V/m}\ .$$

(b) The displacement current is

$$\begin{aligned} i_d &= \varepsilon_0 \frac{d\Phi_E}{dt} = \varepsilon_0 A \frac{dE}{dt} = \varepsilon_0 A \frac{d}{dt}\left(\frac{\rho i}{A}\right) = \varepsilon_0 \rho \frac{di}{dt} \\ &= (8.85 \times 10^{-12}\,\text{F})(1.62 \times 10^{-8}\,\Omega)(2000\,\text{A/s}) = 2.87 \times 10^{-16}\ \text{A}\ . \end{aligned}$$

(c) The ratio of fields is

$$\frac{B(\text{ due to } i_d)}{B(\text{ due to } i)} = \frac{\mu_0 i_d/2\pi r}{\mu_0 i/2\pi r} = \frac{i_d}{i} = \frac{2.87 \times 10^{-16}\,\text{A}}{100\,\text{A}} = 2.87 \times 10^{-18}\ .$$