$$SWAC = \frac{A_u C_u + A_R C_R}{A_u + A_R}$$

$$\Delta SWAC = SWAC_{pre} - SWAC_{post}$$

$$= \frac{A_u C_u + A_R C_R}{A_u + A_R} - \frac{A_u C_u + A_R C_{Resid}}{A_R + A_u}$$

$$= \frac{A_R (C_R - C_{Resid})}{A_u + A_R}$$

$$= \left(\frac{A_R}{A_u + A_R}\right)(C_R - C_{Resid})$$

$$\frac{\Delta SWAC}{SWAC} = \frac{\left(\frac{A_R}{A_u + A_R}\right)(C_R - C_{Resid})}{\frac{A_u C_u + A_R C_R}{A_u + A_R}}$$

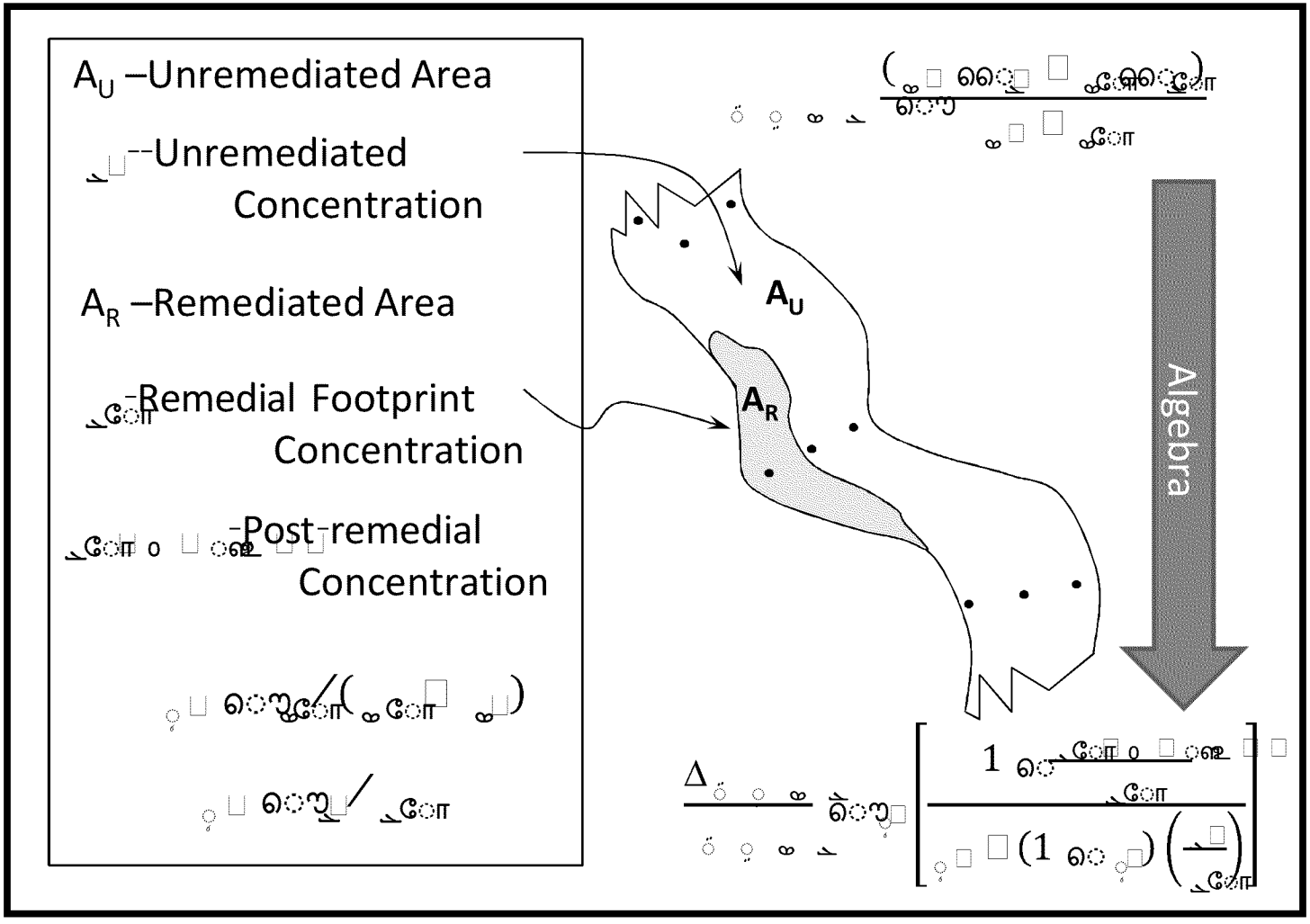
$$\frac{\Delta SWAC}{SWAC} = \left(\frac{A_R}{A_u + A_R}\right) \frac{\left(\frac{C_R - C_{Resid}}{C_R}\right)}{\frac{\left(\frac{A_u C_u}{C_R} + A_R\right)}{A_u + A_R}}$$

$$= \left(\frac{A_R}{A_u + A_R}\right) \frac{\left(1 - \frac{C_{Resid}}{C_R}\right)}{\left(\frac{A_u}{A_u + A_R}\frac{C_u}{C_R} + \frac{A_R}{A_u + A_R}\right)}$$

$$= R_A \left(\frac{1 - \frac{C_{resid}}{C_R}}{(1 - R_A)\left(\frac{C_u}{C_R}\right) + R_A}\right)$$

$$= R_A \left(\frac{\left(1 - \frac{C_{resid}}{C_R}\right)}{R_A + (1 - R_A)\left(\frac{C_u}{C_R}\right)}\right)$$

Robust Planning Approach
Based on Relative Reduction in SWAC



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Robust Planning

$$\frac{\Delta SWAC}{SWAC} = R_{\square}\left[\frac{1 - \frac{C_{\square}}{C_{\square}}}{R_{\square} + (1 - R_{\square})\left(\frac{C_{\square}}{C_{\square}}\right)}\right]$$

$R_{\square}$ (Proportion Remediated)	$\frac{\Delta SWAC}{SWAC}$
0	0
0.5	$\frac{1 - \frac{C_{\square}}{C_{\square}}}{1 + \frac{C_{\square}}{C_{\square}}}$
1.0	$1 - \frac{C_{\square}}{C_{\square}}$

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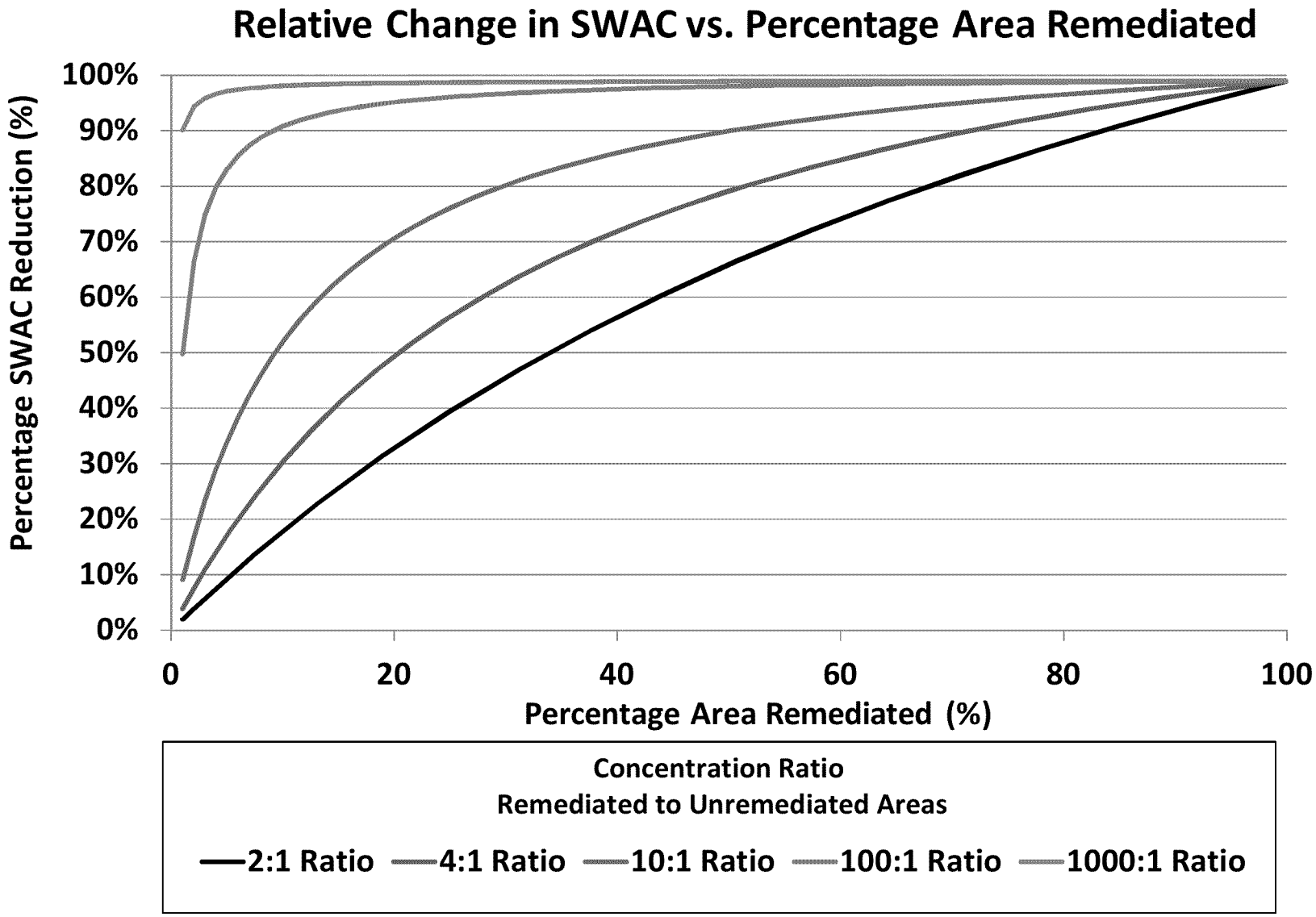

Note: Assumes 99% reduction within footprint area.

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