$Q_{\Delta\Delta} = N^{-1}$, $\underline{\hat{l}}$, v $\qquad \underline{\underline{\hat{l} = \boxed{} \cdot l}}$

$y = Ax$

$\underline{\underline{\Sigma_{yy} = A \Sigma_{xx} A^T}}$

$\hat{l} = l + v$, $v + B\Delta = f$, $v = f - B\Delta$

$\hat{l} = l + f - B\Delta$, $f = d - l$,

$\hat{l} = \underline{\underline{l}} + d - \underline{\underline{l}} - B\underline{\underline{\Delta}}$, $\hat{l} = d - B\underline{\underline{\Delta}}$

$\Delta = (B^T W B)^{-1} B^T W (d - l)$

$\hat{l} = d - B(B^T W B)^{-1} B^T W (d - l)$

$\hat{l} = \underbrace{d - B(B^T W B)^{-1} B^T W l}_{} + \underbrace{B(B^T W B)^{-1} B^T W}_{} \underline{l}$

$$Q_{\hat{\ell}\hat{\ell}} = \underbrace{B(B^TWB)^{-1}B^TW} \cdot Q \cdot \left[B(B^TWB)^{-1}B^TW\right]^T$$

$$WB\,(B^TWB)^{-1}B^T$$

$$= B(\underbrace{B^TWB}_{N^{-1}})^{-1}\,\underbrace{B^TW \cdot \overset{I}{\boxed{Q \cdot W}} \cdot B}\,\underbrace{(B^TWB)^{-1}}\,B^T$$

$$\boxed{Q_{\hat{\ell}\hat{\ell}} = B N^{-1} B^T} \qquad \Sigma_{\hat{\ell}\hat{\ell}} = \sigma_0^2\, Q_{\hat{\ell}\hat{\ell}}$$

$$Q_{vv} = ? \qquad \underline{v = \square \cdot \underset{\sim}{\ell} + \text{const.}}$$

$$Q_{vv} = \square\, Q_{\ell\ell}\, \square^T$$

$$v = f - B\Delta, \quad v = d - l - BN^{-1}B^TW(d-l)$$

$$v = d - l - BN^{-1}B^TWd + BN^{-1}B^TWl$$

$$v = \underbrace{(I - BN^{-1}B^TW)d}_{\text{constant vector}} + \underbrace{(BN^{-1}B^TW - I)}_{\square}\, l \qquad Q : Q_{ll}$$

$$\square \cdot l$$

$$Q_{vv} = (BN^{-1}B^TW - I)\, Q\, (BN^{-1}B^TW - I)^T$$

$$= (BN^{-1}B^T - Q)(WBN^{-1}B^T - I)$$

$$(BN^{-1}B^T - Q)(WBN^{-1}B^T - I)$$

$$BN^{-1}\underbrace{B^TWB}_{}\underbrace{N^{-1}}_{}B^T + Q - BN^{-1}B^T - BN^{-1}B^T$$

$$BN^{-1}B^T + Q - BN^{-1}B^T - BN^{-1}B^T$$