



Active Ground Water Remedial Action Performance Monitoring


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Monitoring Overview Based on Remedial Technology and Conceptual Site Model

- Implement a ground water monitoring program based on CSM
- Evaluate data to determine the effectiveness of the remedial actions
- Re-evaluate remedial action technology




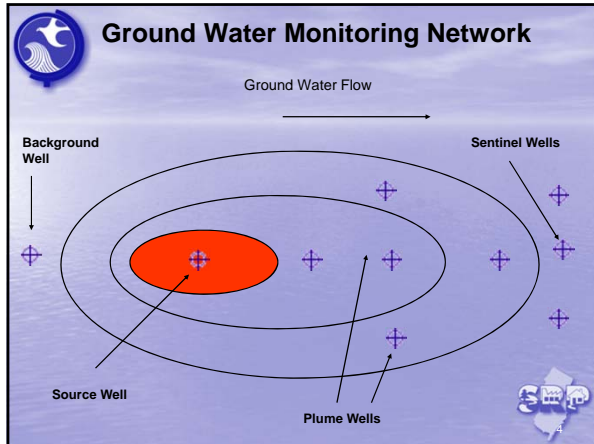


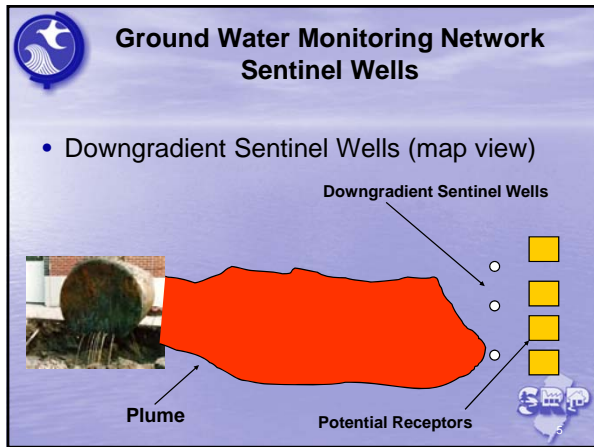
Ground Water Monitoring Network

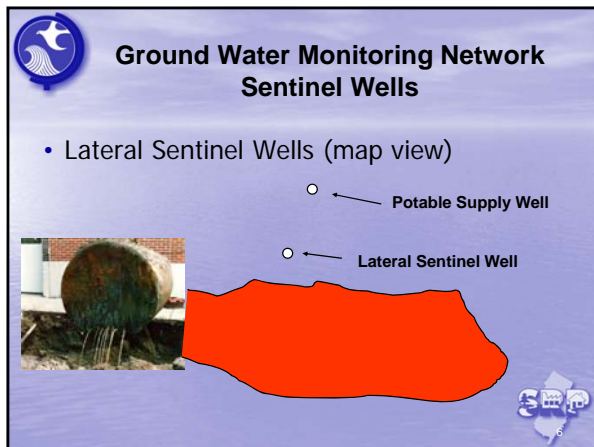
Performance monitoring wells should be located:


- Source area
- Plume & plume fringe area
- Upgradient of receptors (sentinel wells)



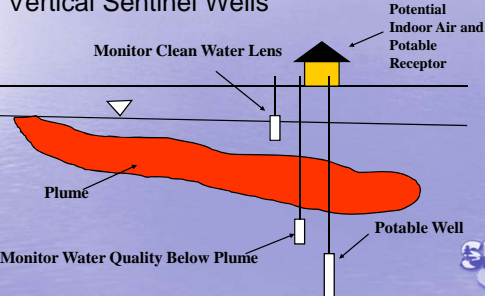








 **Ground Water Monitoring Network Sentinel Wells**

- Vertical Sentinel Wells






 **Ground Water Monitoring Network**

Use the monitoring network to evaluate:


- Hydraulic capture zone
- Removal of contaminant mass
- The long-term performance of the remedy
- Protection of receptors




 **Data Trend Evaluation**

Various statistical tests available:

- Wilcoxon Rank-Sum (Mann Whitney-U)
- Linear Regression
- Mann-Kendall Trend Test
- Theil-Sen Trend Line
- www.epa.gov/osw/hazard/correctiveaction/resources/guidance







Remediation Technology Evaluation

What do the data show?
Did the remedial action achieve the objectives?


- Effective source control
- Decrease in dissolved contaminant concentrations
- No threat to receptors






Technology Evaluation

Remedy is effective
OR
Data indicate adjustments are needed





Apply for Remedial Action Permit

- After one year....
 - Is system operational and functional?
 - Does the system meet remediation goals?
 - Is the ground water monitoring program adequate?
 - Is a revised monitoring program required?
 - On track for natural attenuation?

