

Post-Remedy Verification Ground Water Monitoring Guidance for VAP Properties

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New VAP Technical Guidance Compendium Document

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VA30011.14.004

<http://www.epa.ohio.gov/portals/30/vap/tgc/va30011-14-004.pdf>



Verification Monitoring

- Ground water monitoring conducted after applicable standards have initially been achieved
- To establish that the property has met applicable standards at the compliance point
- Look for rebound after remedy completed
- Establish that long term trends of the COC will not result in future exceedance of applicable standards

Verification Monitoring in VAP

- Once applicable standards are met:
 - Monitor for a minimum of eight consecutive sampling events
 - Quarterly over a two year period

When should verification sampling start?

- Once all standards have been met at all wells at the compliance point
- At least one quarter after ground water results are at or below the applicable standard
- Assess the influence of the remedy before starting the minimum eight consecutive quarterly sampling events

Example: Fluid Injection

- The minimum eight consecutive quarters of verification monitoring should not begin until:
 - Proxy data (e.g. injectate concentrations, redox parameters, daughter product concentrations, etc.) demonstrate that injected fluids no longer affecting ground water quality

Example: Pump and Treat

- Verification monitoring should not begin until:
 - Pumping has stopped, AND
 - Ground water elevations have returned to pre-pumping conditions

Example: Monitored Natural Attenuation

- Begin verification monitoring after the property-specific evaluation and monitoring have met their performance standards

Verification Monitoring Data Analysis

- Comparison to standard:
 - If all eight samples for each well are below the applicable standard for each COC, compliance has been demonstrated
 - If 95% UCL exceeds standard OR if last sample result exceeds standard, compliance has not been demonstrated
- Statistical trend analysis – must show a statistically decreasing or stable trend

Operation and Maintenance

- Generally, remedial activities must achieve applicable standards within five years, **inclusive of verification monitoring.**

US EPA “Attainment Monitoring” Guidance

- U.S. EPA 2014. Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at Groundwater Monitoring Wells. OSWER 9283.1-44. August 2014
- <http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/GWcompletion-recommendedapproach-final-8.4.2014.pdf>
- Includes online tool for trend testing

Questions?