



Post-storm groundwater checklist

Reducing data continuity risk for long-term monitoring programs after a storm event

An unflagged storm event can skew trends and compromise years of recorded data. Long-term monitoring programs need non-routine site assessment, sampling, and chain-of-custody steps.

However, storm events and natural disturbances remain among the least planned-for contingencies in contaminated site management. These natural conditions can include:

- **Precipitation-driven events** – heavy rainfall, flash floods, riverine flooding, storm surge and snowmelt.
- **Severe atmospheric events** – hurricanes, tropical storms, tornadoes and high-wind events.
- **Geophysical disturbances** – earthquakes, ground settlement and soil liquefaction, and mass movement events such as landslides, mudslides and debris flows.

This checklist is field-ready and immediately applicable for contaminated site storm response and recovery management. The sections are ordered to reflect how a response should unfold. Adapt each step to the contaminant profile and regulatory context of each site you manage. Timing matters as much as technique – but safety comes first. Site conditions must be assessed before field staff enter.

The most common post-storm mistakes – missed sampling windows, holding time exceedances and unexplained regulatory exceedances – almost always result from delayed action or incorrect sequence. This checklist tells you what to do, what order and when.



First 24–72 hours – storm response priorities

- ✓ Conduct a site walkover as soon as safely accessible. Conditions may include downed electric lines, unstable banks, structural hazards, standing water depth and air quality issues (particularly at petroleum sites).
- ✓ Document the site extensively before anything is disturbed; photograph everything: sheen, staining, erosion, pooling and displaced materials.
- ✓ Check monitoring well caps and casings for inundation or damage.
- ✓ Note changes to drainage patterns and any new off-site migration pathways.
- ✓ Assess whether stormwater has reached or breached containment areas.
- ✓ Log storm totals and intensity (NOAA nearest station if no site gauge).
- ✓ Notify client and document communications – timestamp everything.

Post-storm sampling sequence and timing

Timing is the most common post-storm mistake. By pre-staging sampling equipment – coolers, ice, and COC forms – before a forecasted storm event, you can significantly improve response time and reduce the risk of holding time exceedances for time-critical parameters. The sampling sequence:

1. **Capture surface water and stormwater first** – This is the shortest, most useful collection window of any sample type.
2. **Wait on groundwater** – Sample the monitoring wells only after turbidity settles and water levels begin recovering toward pre-storm baseline.
3. **Don't skip sediment** – This step is frequently overlooked and regulators are likely to notice.
4. **Add a post-storm interval** to your normal groundwater schedule where site conditions warrant.

Note: consider expanding your analyte suite for the following:

- Metals: if pH or redox disruption is suspected
- PFAS: if site history includes foam, fire suppression or industrial laundry – storm-mobilized PFAS in urban stormwater is now well-documented.

Sample handling, chain of custody and holding times

- ✓ Be overprepared with extra containers for the parameters you may want to test based on conditions.
- ✓ Confirm holding times with your lab before you sample. Do not let holding times lapse.
- ✓ Note all field deviations directly on the COC – conditions, access limitations and protocol changes – and document the known or suspected reasons.
- ✓ Flag storm-event samples explicitly at submission – context can shape interpretation and reporting of unexpected results.
- ✓ Maintain cold chain even under difficult logistics – be wary of sample volumes and reporting limits. For LL TSS, 1 liter is required.
- ✓ Call your lab early if courier access is compromised.



Interpreting post storm results

- ✓ Compare against your most recent pre-storm baseline – not historical averages.
- ✓ Treat first post-storm groundwater results as potentially transient – confirm with a follow-up round before redrawing plume boundaries.
- ✓ Turbidity-elevated metals or organics in groundwater may reflect sampling artifact, not true dissolved-phase increase – note the distinction explicitly.
- ✓ Document the story before you submit the data – a brief storm event memo sent proactively is better than unexplained exceedances showing up in a routine report.

Reporting triggers and regulatory obligations

1. **Check your reporting triggers now – not after the event.** Some jurisdictions have tight notification windows for storm-related exceedances.
2. **Document the storm itself as a formal site record** – dates, rainfall and what you observed.
3. **For an exceedance, send a brief context memo with your data.** A short proactive explanation beats a phone call from your regulator asking what happened.
4. **Update your site conceptual model if the storm revealed new flow paths or transport patterns.** That's a finding, not a footnote.

ALS supports storm response with rapid turnaround, flexible scheduling and national surge capacity. Connect with your project manager before conditions deteriorate to get answers to your questions about method selection, turnaround or surge capacity.

