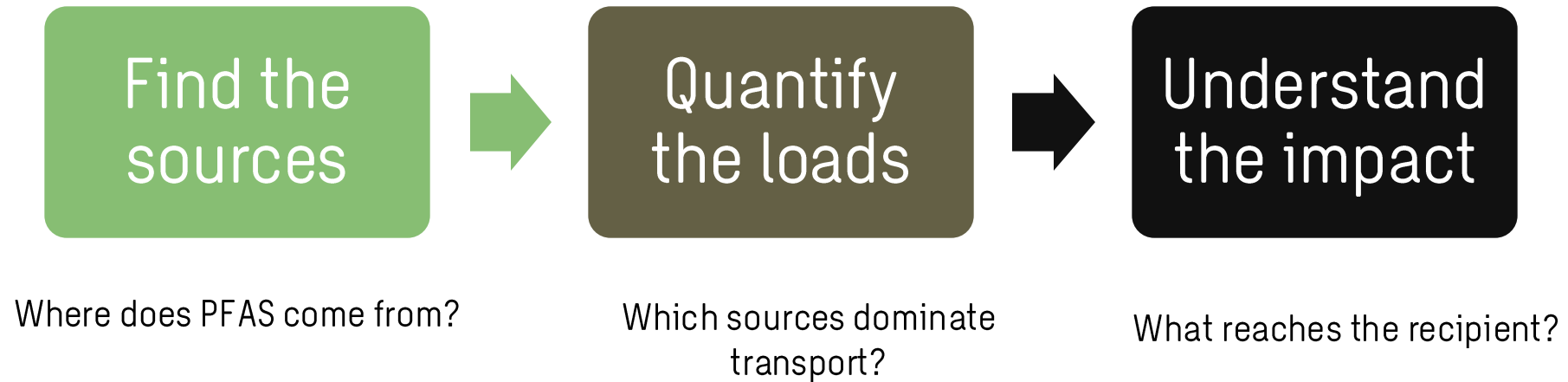


From PFAS Sources to Recipient Loads

Integrated source tracing using passive sampling, flow measurements & modelling

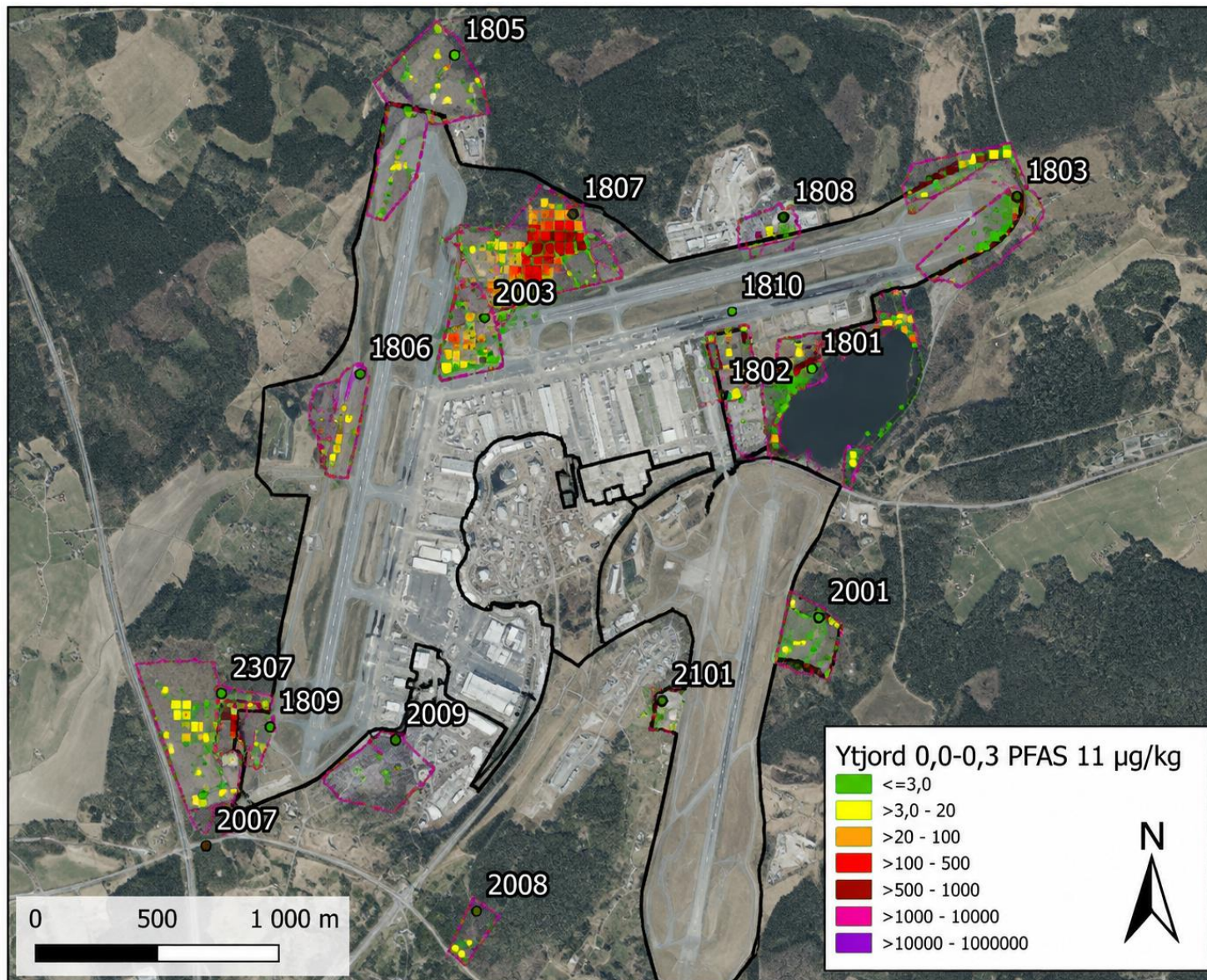
Which PFAS sources actually matter?



From source identification to recipient-relevant PFAS loads

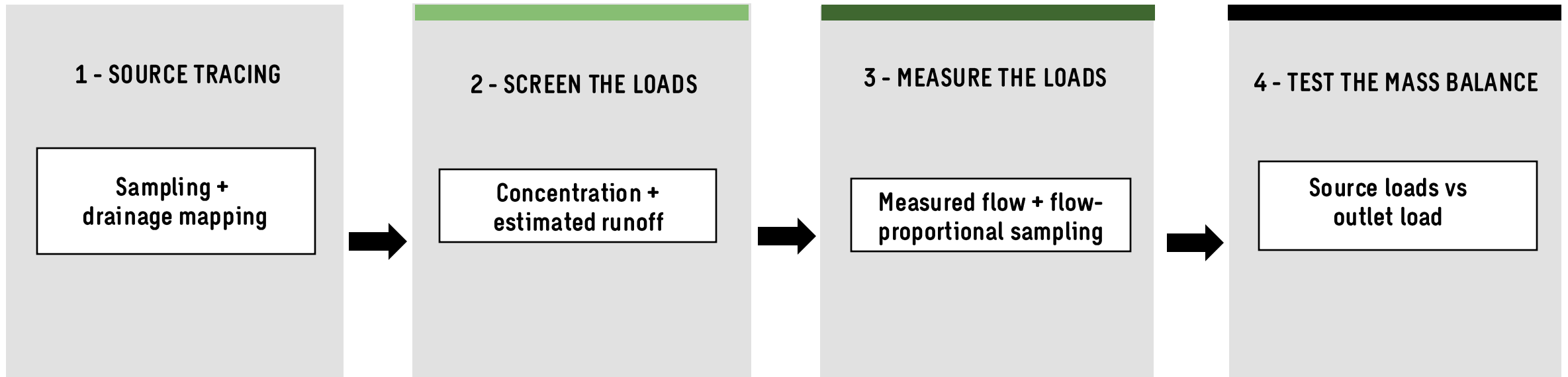
Why follow the water?

Large sites may contain several PFAS source areas — but contamination alone does not show what is transported off site.



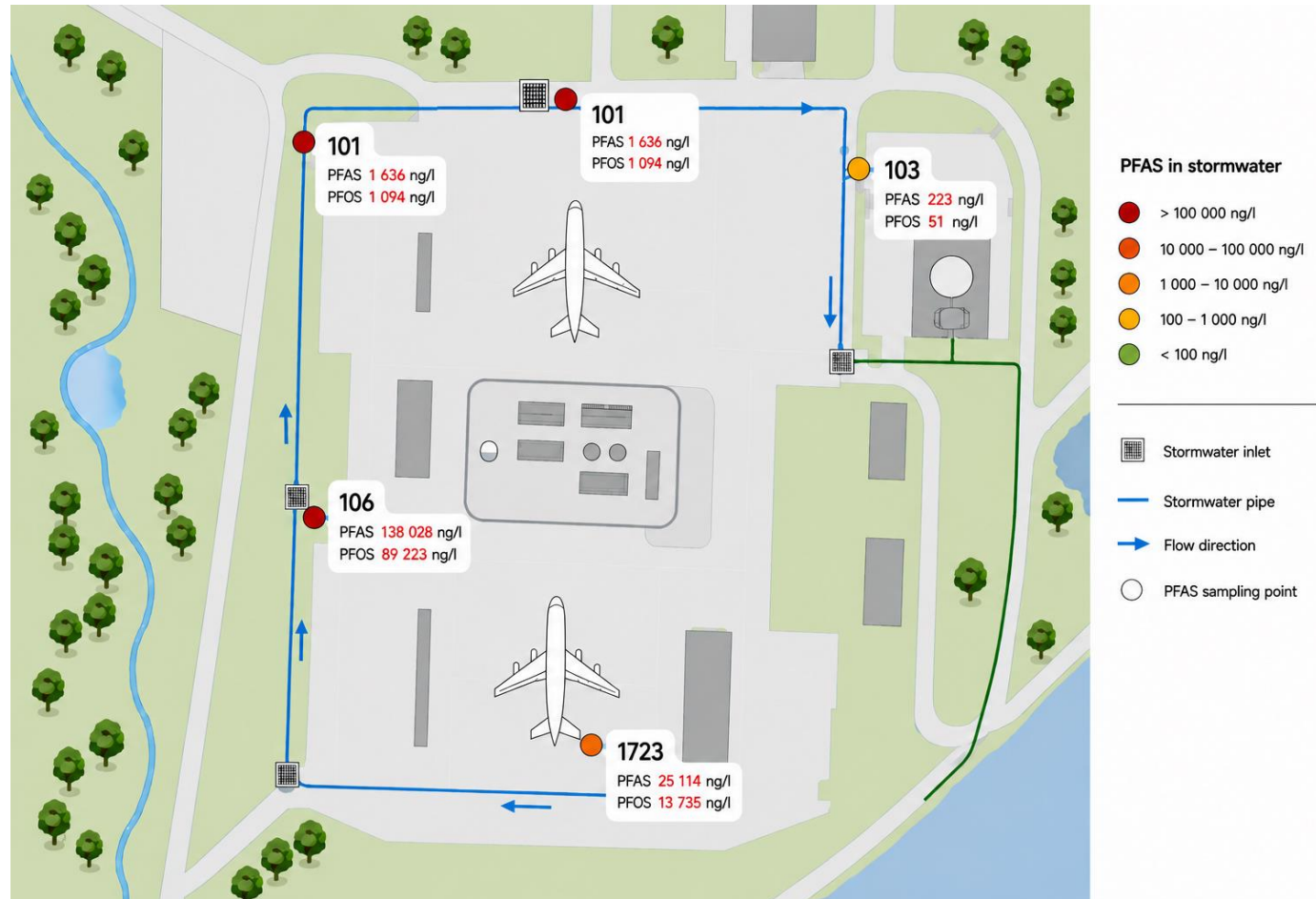
From source tracing to recipient load

Each step builds on the previous one — from source identification to quantified PFAS loads and a tested mass balance.



Step 1 — Tracing PFAS sources

Combine time-integrated sampling with drainage mapping and site-specific flow-path information.



SOURCE TRACING

1. Drainage mapping

Map potential pathways

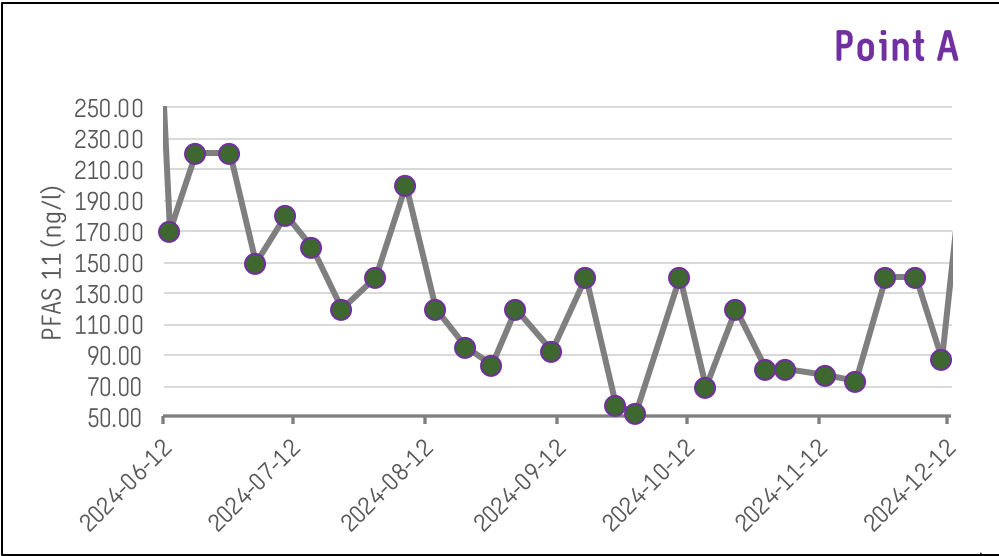
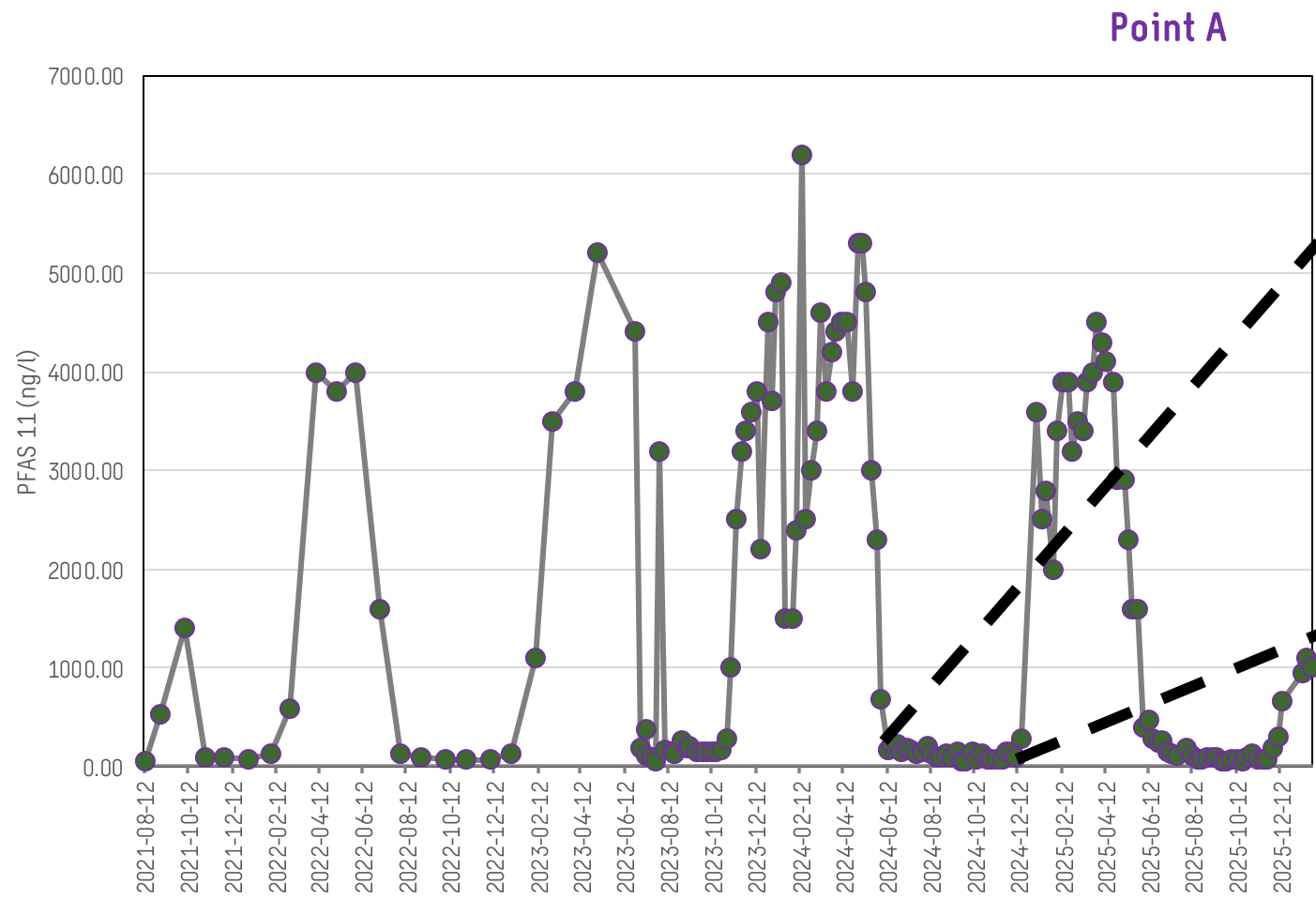
2. Tracer testing / filming

Confirm hydraulic connections

3. Sampling

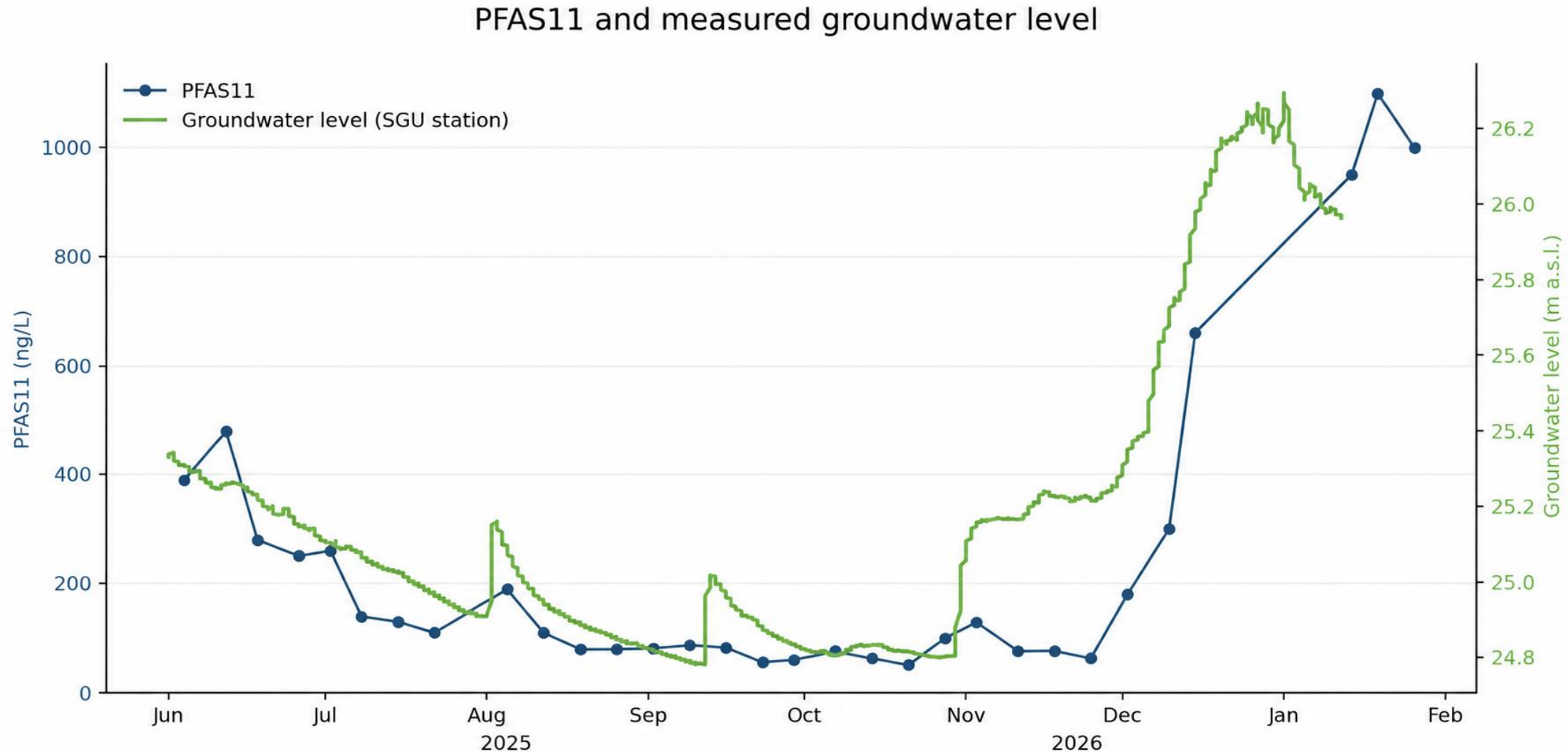
Identify and compare potential PFAS sources

Step 1 —What can a single grab sample miss?



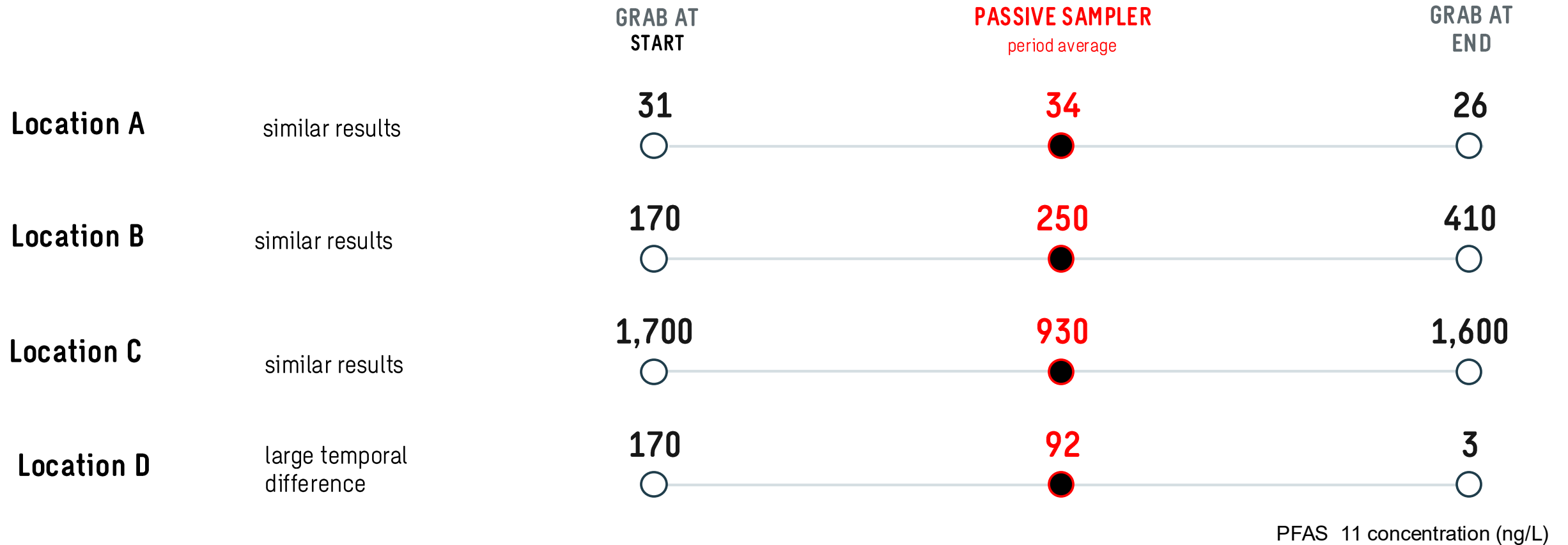
Step 1 — PFAS concentrations vary substantially over time

PFAS11 concentrations and measured groundwater levels



Step 1 — What can a single grab sample miss?

Stormwater at a large industrial site — grab samples compared with passive-sampler period averages



Steps 2 - 3 — From screening to measured PFAS loads

Targeted flow measurements and flow-proportional sampling provide more robust estimates of PFAS mass transport.

SCREENING

PFAS concentration
×
calculated runoff
=
Estimated PFAS
load

Rank sub-catchments and
identify where
measurements add most value

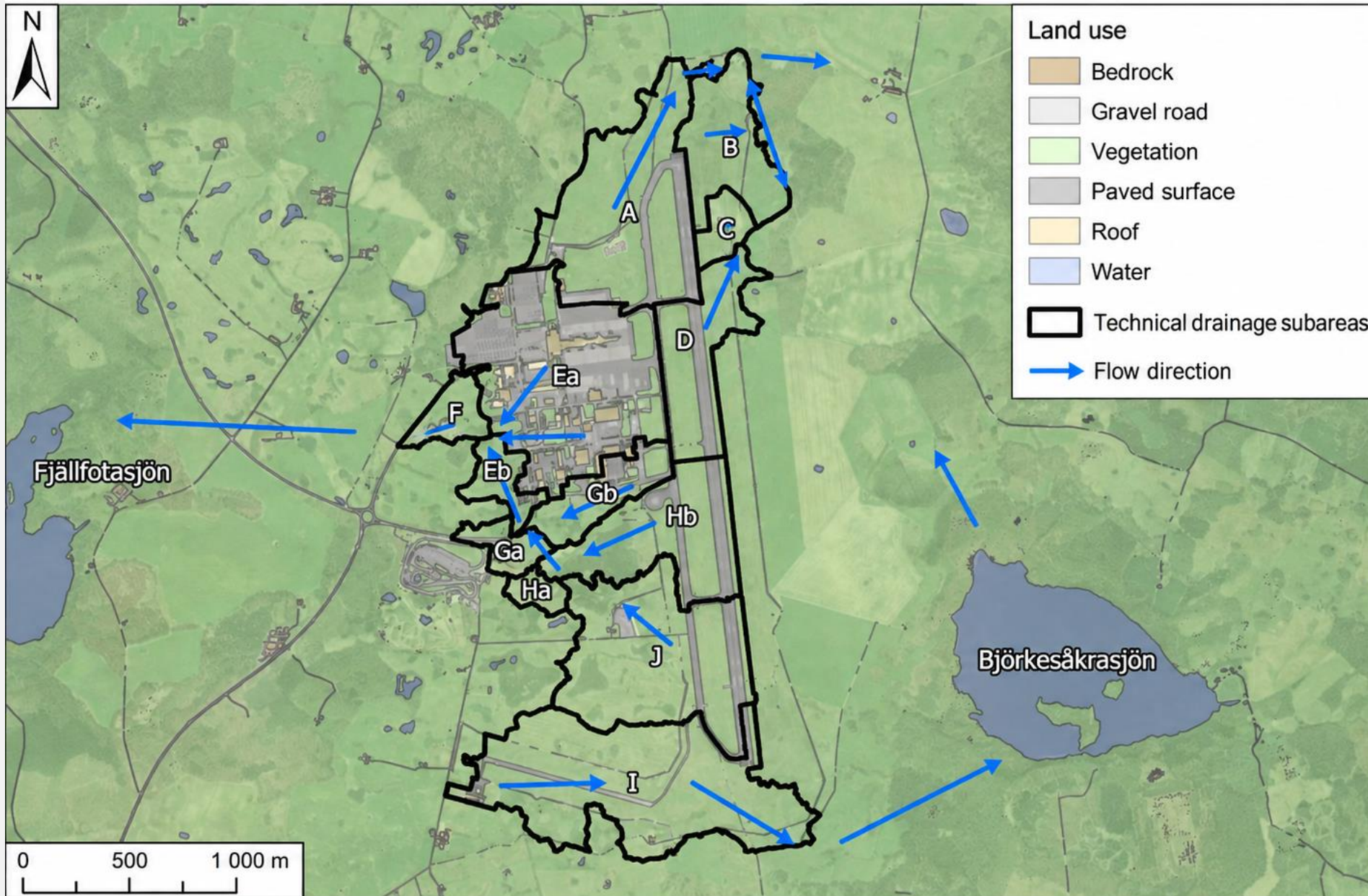


Targeted
measurement
where needed

MEASUREMENT

Flow-proportional
sampling +
measured flow
=
Measured PFAS load

Case example — Airport sub-catchments



Flow-proportional sampling changed the load picture

Measured flows revised the screening estimates and focused the remaining investigation.

SCREENING ESTIMATE → FLOW-PROPORTIONAL MEASUREMENT

	Before	→	After
Hard-surfaced area Ea	153 g	→	15 g
Fire-training area G+H+J	220 g	→	128 g
Western outlet V1	374 g	→	152 g

Values shown are PFAS11 mass estimates (g/year) from the case example;
brown = screening, red = flow-proportional measurement.

WHAT DID WE LEARN?

- Hard-surfaced runoff contributed less than suggested by the screening calculation.
- The fire-training area remained important

Step 4 — Testing the mass balance

Does the quantified source load explain the measured outlet load?

TOTAL SOURCE LOAD  MEASURED OUTLET LOAD



CONSISTENT

Supports the
conceptual
understanding

IF THE BALANCE IS NOT CONSISTENT?

1. Missing sources / pathways
2. Uncertainty in flow estimates
3. Transformation / temporal variability

A mismatch helps identify remaining uncertainties.

Take-home messages

1. Concentration alone is not enough

PFAS load depends on concentration and flow

2. Screen first — then measure

Measure where better data add most value.

3. Test the mass balance

Use the mass balance to identify remaining uncertainties

Use the quantified load to assess the site's contribution to the recipient.

Transforming society together

