

# Water Source Identification Test

Compare unknown or leaking water with known municipal, borehole, rainwater, groundwater, sewer, wastewater or process-water sources.

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Leak and seepage investigations. Side-by-side source comparison. Chemistry and microbiology where required. Clear H<sub>2</sub>OGuru interpretation.

## Identify the Most Likely Source of Unknown Water

Water appearing in a basement, building, excavation, road reserve, retaining wall, tunnel, mine, industrial site or residential property may come from several possible sources. It could be municipal water, groundwater, a leaking borehole line, rainwater, process water, irrigation water, pool water, greywater, septic leakage or leaking sewer water.

The H<sub>2</sub>OGuru Water Source Identification Test compares the chemistry of the unknown sample with one or more known reference samples. Differences and similarities in dissolved minerals, salts, hardness, chloride, sulphate, alkalinity and related indicators can help determine which source is the closest match.

Where leaking sewer water or wastewater is suspected, microbiological and pollution indicators may be added. These can include E. coli, faecal coliforms, ammonia, nitrate, phosphate and chemical oxygen demand, depending on the investigation.

This type of investigation is most useful when the comparison samples are collected at the same time and under similar conditions. It does not function like a DNA test and cannot always prove the source with absolute certainty, but it can provide strong supporting evidence.

## Package at a Glance

### Primary Purpose

Compare unknown water with suspected sources

### Typical Samples

Leak, seepage, municipal, borehole, sewer and groundwater

### Assessment Type

Comparative chemistry with microbiology where required

**Best Practice**

Collect all samples during the same visit

**Laboratory**

SANAS-accredited testing partner

**Reporting**

Side-by-side results and H2OGuru interpretation

**Who Should Use This Package?**

**Property Owners**

Investigate unexplained water entering basements, walls, foundations, gardens or paved areas.

**Insurance and Loss Adjusters**

Support investigations involving leaks, flooding, sewer damage, structural damage or disputed water sources.

**Engineers and Contractors**

Assess water encountered during excavation, tunnelling, construction or infrastructure works.

**Municipalities**

Compare suspected municipal or sewer leaks with groundwater, stormwater or nearby borehole sources.

**Mines and Industrial Sites**

Investigate seepage, process-water migration, sewer leakage, groundwater ingress or cross-contamination.

**Body Corporates and Facilities**

Resolve recurring water ingress in parking areas, plant rooms, service ducts and shared buildings.

**How Water Source Identification Works**

Different water sources often have different chemical signatures. By comparing the unknown water with suspected reference sources, the investigation can identify the closest chemical match. Where sewage is suspected, microbiological and wastewater-related indicators can be added.

| Comparison Indicator    | What It Can Show                            | Why It Is Useful                                                                 |
|-------------------------|---------------------------------------------|----------------------------------------------------------------------------------|
| Electrical Conductivity | The overall concentration of dissolved ions | Provides a quick indication of whether two waters have similar mineral strength. |

|                                     |                                             |                                                                                                               |
|-------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Total Dissolved Solids              | General dissolved mineral content           | Helps distinguish low-mineral municipal or rainwater from more mineralised groundwater or wastewater.         |
| Calcium and Magnesium               | Hardness characteristics                    | Useful for comparing borehole, municipal and groundwater signatures.                                          |
| Sodium and Potassium                | Major dissolved cations                     | May distinguish treated, softened, process or naturally mineralised water.                                    |
| Chloride and Sulphate               | Major dissolved anions                      | Often useful for matching or excluding municipal, borehole, pool, process and wastewater sources.             |
| Alkalinity and Bicarbonate          | Buffering and carbonate chemistry           | Can help differentiate groundwater from municipal or rainwater.                                               |
| Iron and Manganese                  | Groundwater and corrosion indicators        | May support a groundwater, borehole or pipe-corrosion origin.                                                 |
| E. coli and Faecal Coliforms        | Faecal contamination                        | Useful where leaking sewer water, septic leakage or wastewater contamination is suspected.                    |
| Ammonia, Nitrate, Phosphate and COD | Wastewater and organic pollution indicators | Can support a sewer, greywater, septic or process-water source when interpreted with the full result pattern. |

A positive E. coli result confirms faecal contamination but does not automatically prove that the source is a municipal sewer. Septic systems, animals, contaminated stormwater and soil can also contribute faecal organisms.

## Common Investigation Scenarios

### Municipal Pipe Leak

Compare water from a wet area or excavation with a nearby municipal tap or supply line.

### Borehole Line Leak

Compare seepage water with the site's borehole water and municipal supply.

### Groundwater Ingress

Investigate water entering basements, tunnels, mines, lift shafts or underground structures.

### Rainwater Infiltration

Assess whether water ingress is linked to rainfall, roof runoff, stormwater or shallow seepage.

### **Leaking Sewer Water**

Compare unknown water with a sewer, manhole, septic or wastewater reference sample using chemistry and microbiology.

### **Process-Water Migration**

Compare unknown water with factory, cooling, boiler, wash or production water.

## **Recommended Sampling Strategy**

### **Unknown Water**

Collect directly from the active leak, seepage point, pooled water or discharge location.

### **Municipal Reference**

Collect from a nearby tap supplied by the suspected municipal network.

### **Borehole Reference**

Collect from the borehole before blending, treatment or storage where possible.

### **Stored or Treated Water**

Collect from tanks, filters, process systems or other suspected internal sources.

### **Sewer or Wastewater Reference**

Where safe and authorised, collect from the suspected sewer, manhole, septic or wastewater line.

### **Repeat Sample**

Collect a second unknown sample when the source is intermittent or changes after rainfall.

Sewer and wastewater samples should only be collected from safe, accessible points using suitable protective equipment and the correct sterile containers.

## **What the Test Can and Cannot Do**

### **It Can Compare Similarity**

The test can show whether the unknown water has a chemical or microbiological profile similar to a suspected source.

### **It Can Exclude Sources**

Large differences in key parameters can help rule out an unlikely source.

### **It Can Identify Faecal Contamination**

Microbiological testing can show whether leaking water has been affected by sewage or another faecal source.

### **It Cannot Guarantee Absolute Proof**

Two sources may have similar chemistry, especially where they originate from the same regional water system.

### **It Cannot Replace Leak Detection**

Chemical comparison does not locate the physical point of a leaking pipe or sewer.

### **It May Need Repeat Testing**

Intermittent leaks, rainfall, dilution and source changes can require additional sampling.

## **Factors That Can Affect the Comparison**

### **Rainfall and Dilution**

Rainwater can dilute salts, nutrients, bacteria and other source indicators.

### **Soil Contact**

Water moving through soil or concrete may dissolve minerals or lose microorganisms before sampling.

### **Evaporation**

Standing water may become more concentrated than the original source.

### **Treatment Systems**

Softening, reverse osmosis, filtration or chemical dosing may alter the source signature.

### **Pipe Corrosion**

Contact with metal pipes can increase iron, copper or other corrosion indicators.

### **Blended Sources**

Unknown water may contain a mixture of municipal, borehole, rain, groundwater and sewer water.

# The H<sub>2</sub>OGuru Sample-to-Solution Process

1

Review the site and suspected sources

2

Plan the comparison sample points

3

Collect samples during the same visit

4

Complete comparative laboratory testing

5

Compare the chemical and microbiological signatures

6

Issue findings and next-step guidance

The most reliable investigation combines laboratory comparison with site information such as pipe routes, sewer layouts, flow direction, rainfall history, pumping records, odour observations and visible leak behaviour.

## What You Receive

### Laboratory Results

Analytical results for the unknown water and each reference source.

### Side-by-Side Comparison

A clear matrix showing similarities and differences between the samples.

### H<sub>2</sub>OGuru Interpretation

A practical conclusion identifying the most likely match, exclusions, sewage indicators and limitations.

# Why Choose H<sub>2</sub>OGuru?

| H <sub>2</sub> OGuru Service  | Benefit to the Client                                                                |
|-------------------------------|--------------------------------------------------------------------------------------|
| Investigation-based planning  | Sampling points are selected according to the actual site and suspected sources.     |
| Comparative chemistry profile | Focuses on parameters that help distinguish one water source from another.           |
| Microbiology where required   | Adds faecal and wastewater indicators where leaking sewer water is suspected.        |
| Accredited laboratory testing | Provides reliable analytical data produced within the laboratory's accredited scope. |
| Clear comparison matrix       | Makes complex laboratory differences easier to understand.                           |
| Practical interpretation      | Explains the likely source, uncertainties and recommended follow-up actions.         |

## Need a Different Analysis?

Not every water source or project requires the same laboratory profile. Explore the other H<sub>2</sub>OGuru testing packages to select the analysis that matches your water source and intended use.

### **SANS 241 Chemistry and Microbiology**

A complete drinking water assessment covering chemical and microbiological quality.

### **SANS 241 Chemistry Only**

For minerals, metals, salts, hardness, scaling and chemical compliance.

### **SANS 241 Microbiology Only**

For E. coli, coliforms and routine microbiological monitoring.

### **SANS 1657 Bottled Water**

For bottled, purified, refill and packaged drinking water.

### **Irrigation Water Testing**

For salinity, sodium hazard, crop suitability and irrigation performance.

### **Wastewater and Effluent**

For treatment performance, discharge assessment and reuse investigations.

### **SANS 51008 Concrete Water**

For water used in concrete mixing, curing and construction applications.

### **Custom Water Testing**

Tailored parameter selection for specialised projects and investigations.

## Turn an Unknown Water Problem Into Clear Evidence

Arrange a professional water source comparison and determine whether the unknown water most closely matches municipal, borehole, groundwater, rainwater, sewer, wastewater or another suspected source.

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