

Identification and assessment of contamination sources in recharge area of drinking groundwater

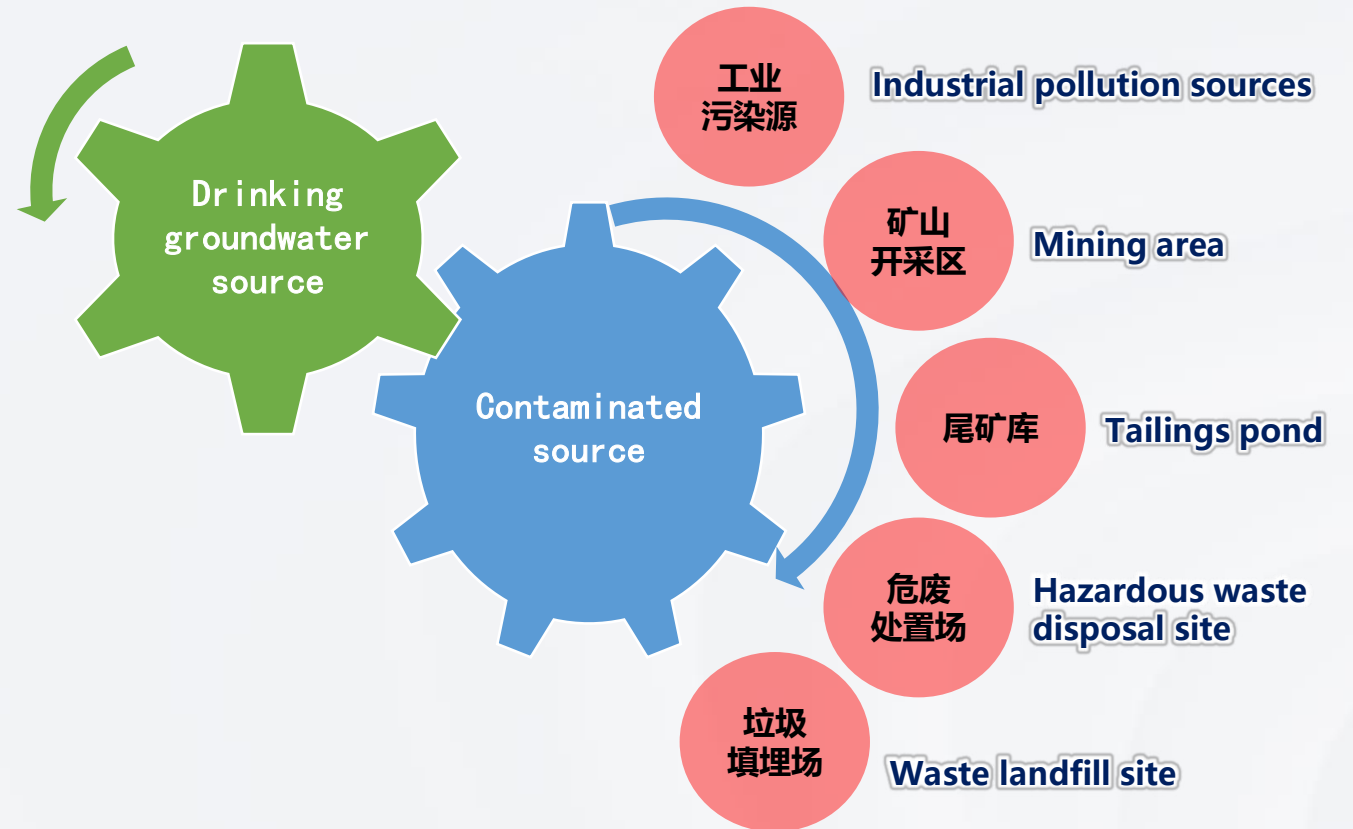
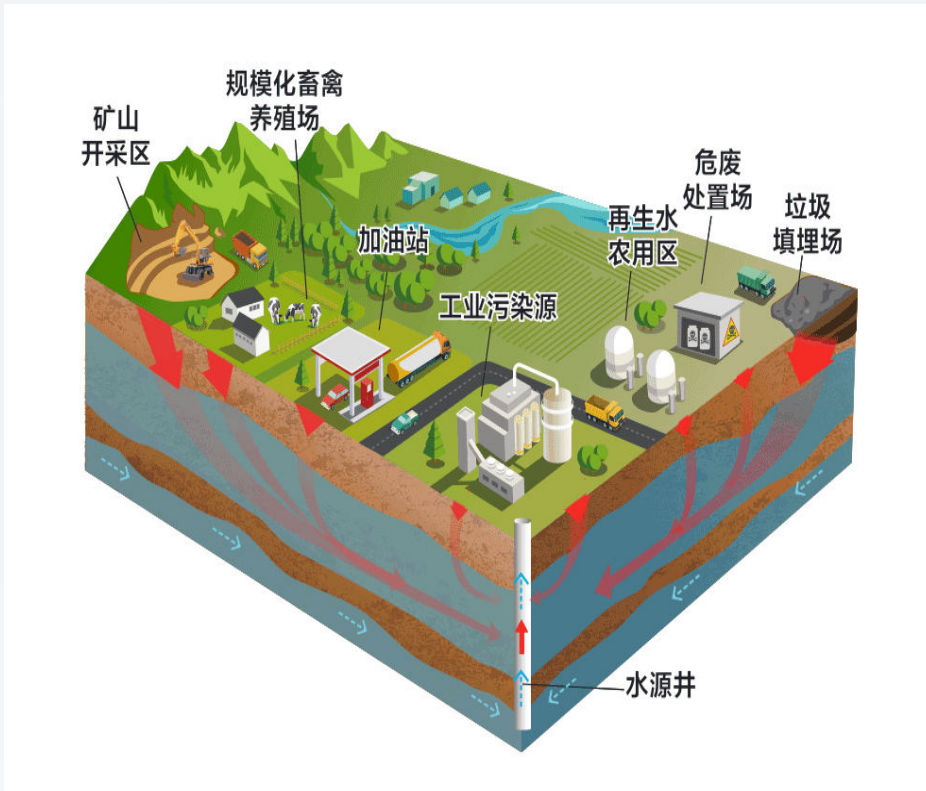
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Content

- Recharge area protection
- Risk control case study
- Summary

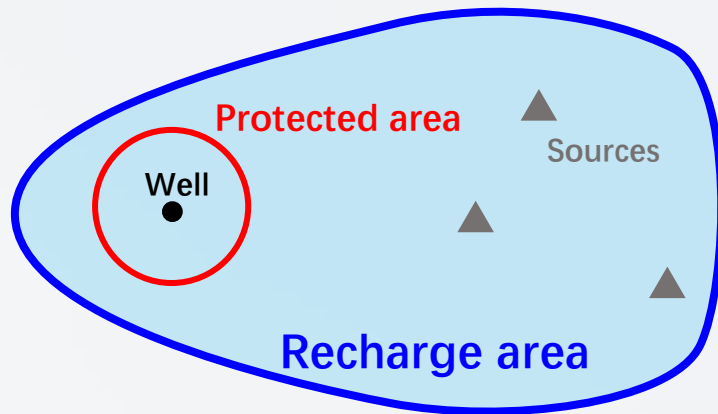


- **Groundwater resource: 20% of the country's total water supply**
- **Pollution source: large number, complex type**
- **Controlling "double source" is the focus of groundwater environment management**

Recharge area protection



➤ The "Water Pollution Prevention and Control Act" and the "Implementation Plan for Groundwater Pollution Prevention and Control" clearly require the **investigation and assessment of recharge areas and risk screening**



protected area management



protected area management



recharge area management

1106 pollution sources within 5 km around the of 187 national groundwater drinking water source quality assessment points



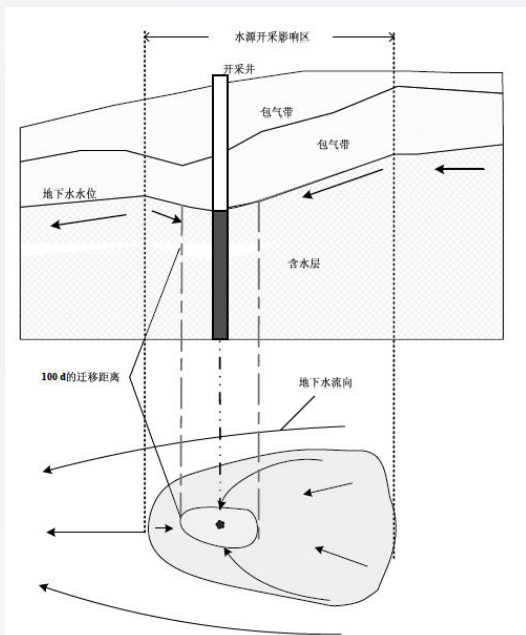
**Key area for
groundwater
pollution
prevention**

**Protected area
保护类区域**

**Controlled area
管控类区域**

- ✓ **Primary protected area of drinking water source**
 - ✓ **Secondary protected area of drinking water source**
 - ✓ **Quasi protected area of drinking water source**
 - ✓ **Recharge area of drinking water source**
-
- ✓ **Groundwater function value**
 - ✓ **Groundwater vulnerability**
 - ✓ **Pollution source load**

Step 1: Delineating source water recharge areas



- 1) Hydrogeological analysis method
- 2-1) Formula method
- 2-2) Numerical simulation method

Source water scale	Groundwater particle migration time			Recommended method
	None protected area	Primary protected area	Secondary protected area	
Medium-small scale (<50,000 m ³ /d)	≥15yr+1100d	≥15yr+1000d	≥15yr	2-1
Large scale (≥50,000 m ³ /d)	≥30yr+1100d	≥30yr+1000d	≥30yr	2-2

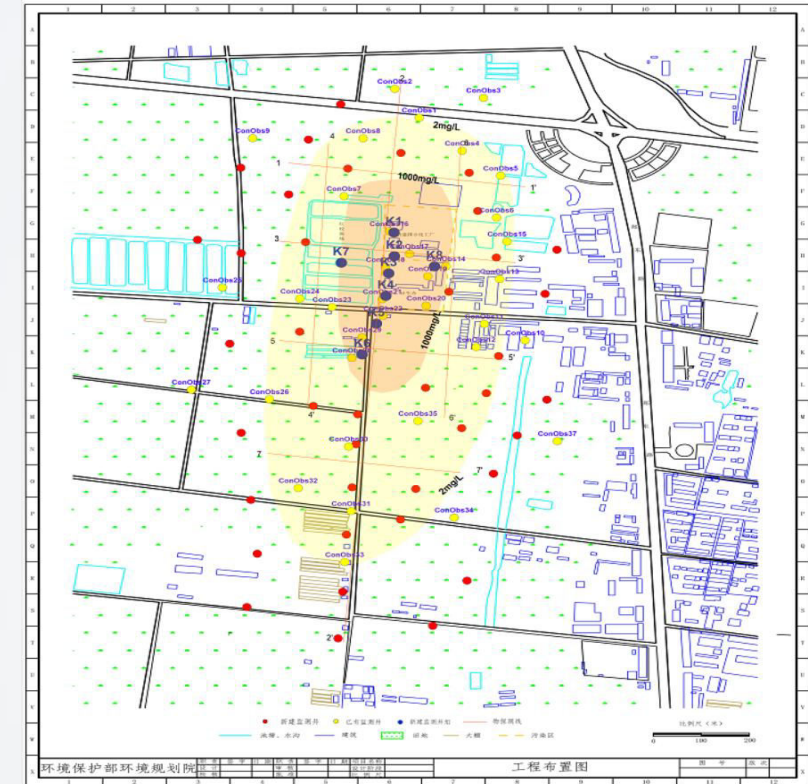
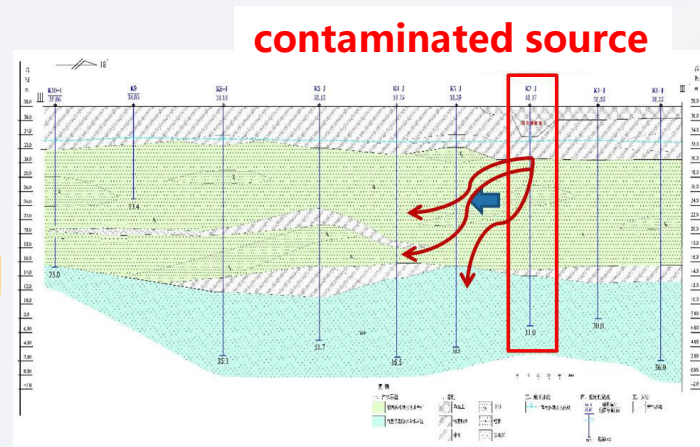
Technical guideline for delineating source groundwater recharge areas

Step 2: Managing source water recharge areas

- Risk sources investigation and list formulation
- Groundwater and soil contamination investigation
- Contamination risk control



Site description



In 5 years, nearly 800m groundwater pollution plume was formed



Contaminant transport simulation



1 yr

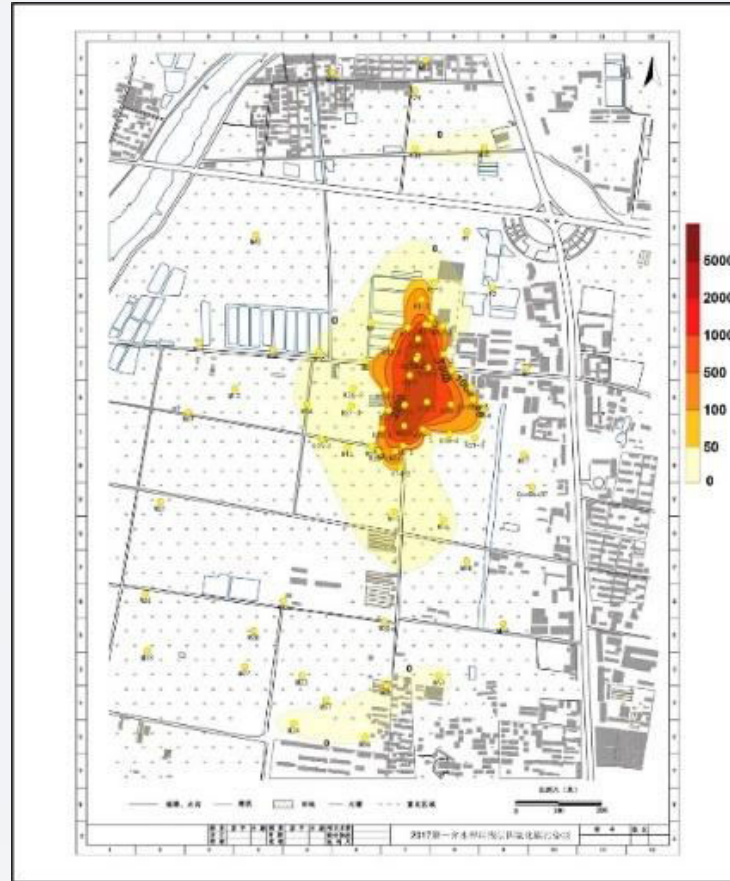
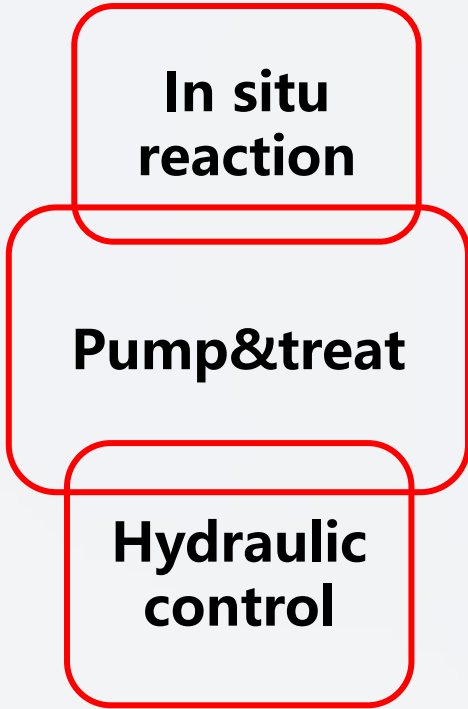
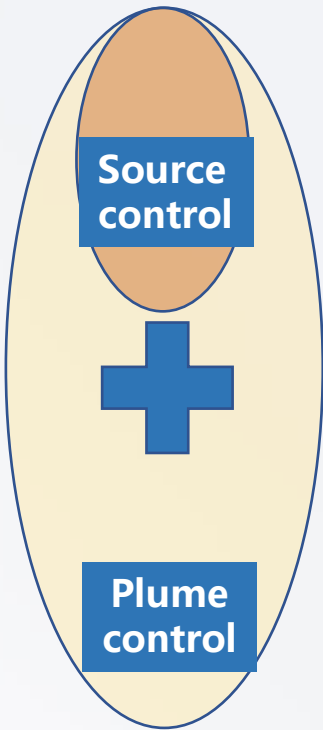
5 yr

10 yr

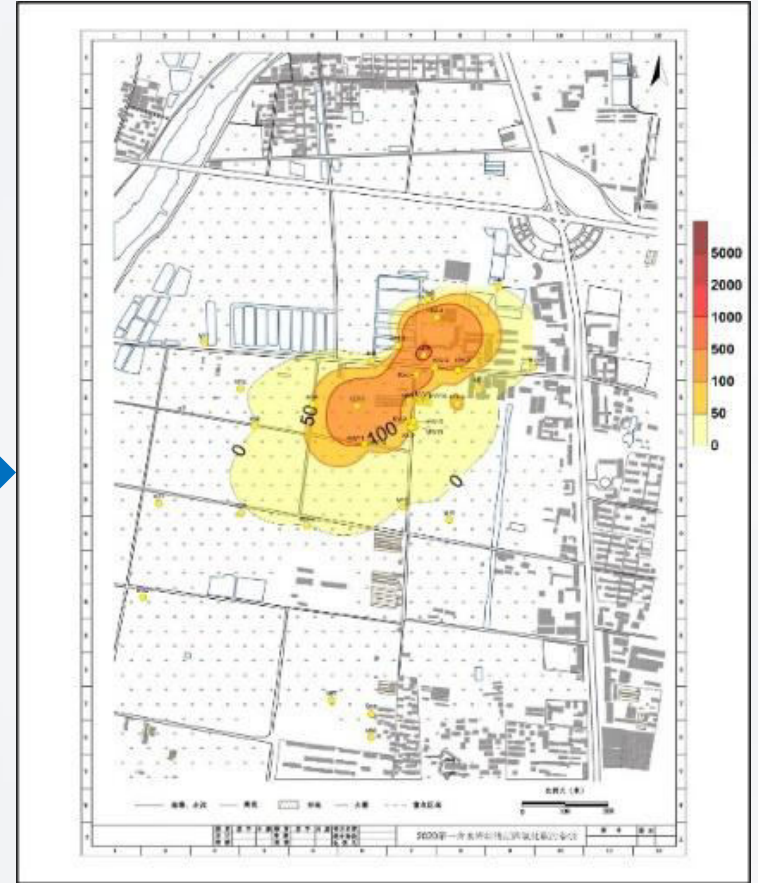
serious threat to the safety of
downstream water source



Groundwater contamination risk control



Before



After

- **Delineating source groundwater recharge areas**
- **Pollution source investigation**
- **Groundwater flow and contaminant transport simulation**
- **Risk control**

Thank you !

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