

# A Study of Water Quality of Tap Water Production Sources in Ban Taphao, Ban Kheenak, and Ban Hat Areas



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## Abstract

This study assessed the quality of tap water in the communities of Ban Tapao, Ban Khinakh, and Ban Hat to support water management, resource conservation, and community awareness. Water samples were collected one sample at a time from each of the three community wells. Various parameters were analyzed, including temperature, pH, electrical conductivity (EC), dissolved oxygen (DO), nitrate, and nitrite.

The results showed that water temperature was 28–30°C, pH was 7.24–7.83, electrical conductivity (EC) was 112–206 µg/L, dissolved oxygen (DO) was 3.0–8.0 mg/L, and nitrate and nitrite levels were 0–1 mg/L in all areas.

## Research Question and Hypothesis

What is the quality of tap water in the communities of Ban Taphao, Ban Khee Nak, and Ban Hat? Does it meet the standards?

The water quality from community water sources in Ban Tapao, Ban Khee Nak, and Ban Hat varies, and the water quality from these sources meets the standards.

## Introduction

Public confidence depends on clean, safe tap water. Irregularities (odor, color, taste) may lead people to unsafe alternative sources. Key indicators: pH, nitrate, nitrite, electrical conductivity, dissolved oxygen. Regular monitoring ensures safety, supports health, and maintains ecological balance. Studying water quality reflects efficiency of local water management systems. Results help improve treatment, supply maintenance, and community well-being. Continuous monitoring is essential for timely problem-solving and long-term safety.

## Research Methods and Materials

### Research Methods

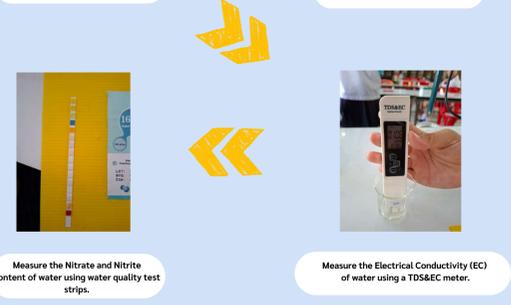
- 01 Defining study points
- 02 Conduct a field survey
- 03 Collect a water sample and measure the water temperature
- 04 Measuring various parameters in the water.



Figure 1. Water supply well at Ban Taphao, Tum Subdistrict, Prang Ku District, Sisaket Province.  
Figure 2. Water supply well at Ban Khee Nak, Tum Subdistrict, Prang Ku District, Sisaket Province.  
Figure 3. Water supply well at Ban Hat, Phak Mai Subdistrict, Huai Thap Than District, Sisaket Province.



Figure 4. Conduct a field survey



Measure the Nitrate and Nitrite content of water using water quality test strips.



Measure the Electrical Conductivity (EC) of water using a TDS&EC meter.

### Materials

1.	Glass tube thermometer	
2.	LabQuest & pH Meter	
3.	TDS & EC	
4.	A kit for measuring dissolved oxygen in water	
5.	Water quality test strips	
6.	Measuring cylinder	
7.	Beaker	
8.	Mobile phone	
9.	Google Maps	
10.	Pencil and pen	
11.	Sample bottle	

## Results

Table 1. Results of pH, Nitrate, Nitrite, Electrical Conductivity, and Dissolved Oxygen measurements of tap water sources in Ban Tapao, Ban Khin Nak, and Ban Hat communities.

Community water supply source.	Water temperature	pH	Nitrate (mg/L)	Nitrite (mg/L)	Electrical Conductivity (µS/cm)	Dissolved Oxygen (mg/L)
Ban Taphao Community	30	7.37	0 - 1	0 - 1	206	5.5
Ban Khee Nak Community	28	7.83	0 - 1	0 - 1	112	8.0
Ban Hat Community	29	7.24	0 - 1	0 - 1	114	3.0

Table 1 Tap Water Quality in Local Communities

Ban Tapao: Temp 30°C, pH 7.37, EC 206 µg/L, Nitrate 0–1 mg/L, Nitrite 0–1 mg/L, DO 5.5 mg/L  
Ban Khee Nak: Temp 28°C, pH 7.83, EC 112 µg/L, Nitrate 0–1 mg/L, Nitrite 0–1 mg/L, DO 8.0 mg/L  
Ban Hat: Temp 29°C, pH 7.24, EC 114 µg/L, Nitrate 0–1 mg/L, Nitrite 0–1 mg/L, DO 3.0 mg/L  
pH values: neutral range (7.2–7.8) Nitrate/Nitrite: low (0–1 mg/L) EC: 112–206 µg/L DO varies: highest in Ban Khee Nak (8.0 mg/L), lowest in Ban Hat (3.0 mg/L)

Table 2. Comparative standards for tap water quality.

Parameter	Unit	Water quality standards
pH	-	6.5 - 8.5
Nitrate	(mg/L)	ไม่เกิน 50
Nitrite	(mg/L)	ไม่เกิน 3
Electrical Conductivity	(µg/L)	100 - 800
Dissolved Oxygen	(mg/L)	5.0 - 8.0

Table 2 Tap Water Quality Standards

pH: 6.5–8.5 (neutral–slightly alkaline, safe for drinking) Nitrate (NO<sub>3</sub><sup>-</sup>): ≤ 50 mg/L (higher levels unsafe) Nitrite (NO<sub>2</sub><sup>-</sup>): ≤ 3 mg/L (higher levels harmful, indicates contamination) Electrical Conductivity (EC): 100–800 µg/L (balanced dissolved substances) Dissolved Oxygen (DO): 5.0–8.0 mg/L (supports aquatic life, prevents spoilage)

## Discussion

Tap Water Quality (Sisaket Province, Jan 16–26, 2026) Ban Tapao & Ban Kheenak: All parameters within standards, including dissolved oxygen. Ban Hat: Meets standards for pH, nitrate, nitrite, and EC, but dissolved oxygen is below the standard. Overall: Tap water in all three communities is generally safe, with only Ban Hat showing low dissolved oxygen.

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## Badges

