

# Biological Denitrification Project in Falset (Tarragona, Spain)



Figure 1: BIOBOX Nitrate Biofiltration Plant with a Flow Rate of 88 GPM

## Technical Summary of the Article:

- **Influent:** Well water
- **Technology:** BIOBOX Nitrate; BIOBOX Arsenic
- **Flow rate:** 88 GPM / 20 m<sup>3</sup>/h
- **Influent N-NO<sub>3</sub>:** 13–16 mg/L / (**NO<sub>3</sub>** 60-70 mg/L)
- **Effluent N-NO<sub>3</sub>:** <9 mg/L / (**NO<sub>3</sub>** <40 mg/L)
- **Influent Arsenic:** 20 µg/L
- **Effluent Arsenic:** < 2 µg/L
- **Plant Characteristics:**
  - Denitrification in anoxic biofilter
  - Filtration for suspended solids removal
  - Chlorination for disinfection to ensure potability

The biological denitrification project in Falset aims to guarantee a supply of high-quality **drinking water** for the local population, addressing the problem of high nitrate and arsenic levels in the town's well water. The plant uses an advanced biological process using BIOBOX Nitrate technology, which converts nitrates into nitrogen gas (N<sub>2</sub>) and BIOBOX Arsenic that reduces arsenic to safe levels, complying with the standards set by health regulations.

With a design capacity to treat a flow of 88 GPM and reduce nitrates to levels below the permitted limits (less than 9 mg/L of N-NO<sub>3</sub>) and arsenic to levels lower than 2 µg/L, the facility aims to ensure safe and potable water for 20% of the population of Falset that depends on this well.

Table 1: Treatment Results

| Parameter                     | Influent | Treated effluent |
|-------------------------------|----------|------------------|
| Flow rate (GPM)               | 88       |                  |
| Flow rate (m <sup>3</sup> /h) | 20       |                  |
| N-NO <sub>3</sub> (mg/L)      | 13–16    | <9               |
| NO <sub>3</sub> (mg/L)        | 60-70    | <40              |
| Arsenic (µg/L)                | 20       | <2               |
| COD (mg/L)                    | -        | <4               |
| Microbiology* (CFU/mL)        | -        | 0                |

\*Aerobic bacteria at 22°C, *Escherichia coli*, total coliforms, enterococci, *Clostridium perfringens*