

# Nandamojo River Action Plan (NAP)



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# Background and History

- The Nandamojo watershed is located on the west coast of Costa Rica at the top of the Nicoya peninsula in the province of Guanacaste.
- The watershed is an important source of potable water for its 3,000 residents and those of nearby communities.
- Sadly the majority of the watershed has been deforested due to more cattle farming for export or for lumber. The demand from the US for cheap beef in the 1950s and 1960s caused much of the land in Guanacaste to be cleared by slash-and-burn agriculture.
- Deforestation has led to major issues with erosion, water retention, and the loss of topsoil.
- Climate: Temperatures can climb over 100 degrees and have two distinct seasons: wet and dry. This is known as a “tropical dry forest” and it supports a unique ecosystem of flora and fauna.

# Mission Statement

NAP's mission is to restore the Nandamojo watershed to a drinkable standard and improve water flow by 2026 according to the World Health Organization's standards for potable water.

# Policies and Programs

- PAHO enforces Millenium Development goals
  - Goal 7: Ensure Environmental Sustainability
  - Access safe drinking water & basic sanitation
- Restoring Our Watershed (ROW)
  - Sustainable land use, bees for microfinancing, creating strong counterparts & watershed education
  - Created Nandamojo Valley Chamber of Commerce
  - 2017 Riparian Corridor Project
- Ecological Blue Flag Program
- The Water Act (2014)



# Problem 1: low water levels

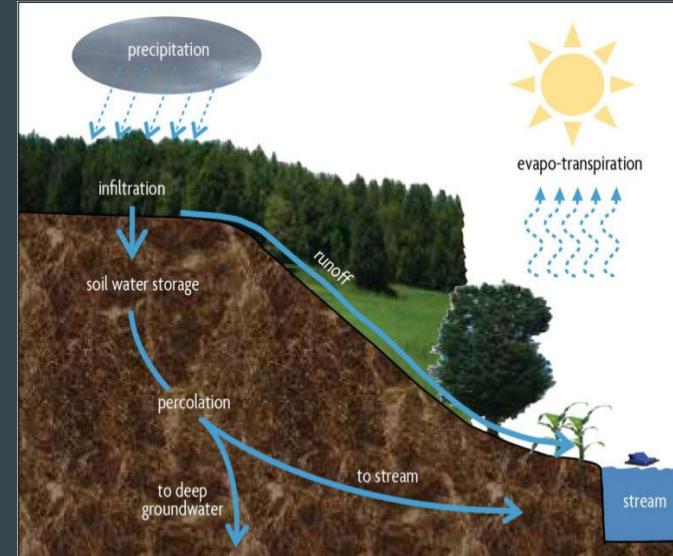
- Without the protective benefits of vegetation, soil becomes eroded and blocks surface pores contributing to surface crusts that restrict the water movement into the soil.
- Deforestation decreases evapotranspiration which replenishes clouds and helps produce rainfall. The decline in rainfall is causing the seasons between rain to become longer and hotter and many rivers including the Nandamojo began to dry up for part of the year.
- This has a negative impact on the communities access to freshwater for drinking and agriculture, economic benefits of the water (both tourism and fishing), and biodiversity.

Causes: the water table is low due to erosion and poor agricultural practices causing low infiltration

- This leads to runoff and no replenishment of groundwater.

Goals: To have water flow year around by increasing infiltration and replanting trees to produce more tree cover to reduce evaporation.

- improve soil infiltration: reduced tillage and using cover crops.





# Problem 2: Erosion

- Healthy soil is trapped under layers of impermeable clay
- Increase in pollutants in water from agricultural run off
  - Leads to eutrophication & dead zones
- Increase in turbidity causes particles to provide attachment places for microorganisms and metals

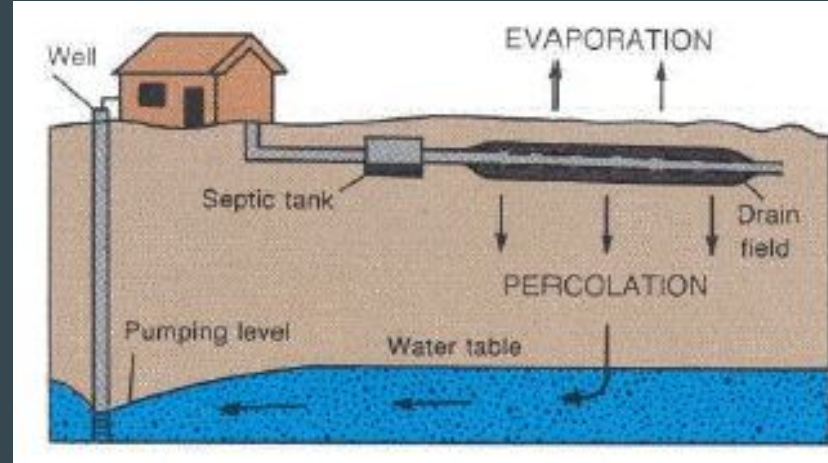
**Causes:** Minimal vegetation blocking/absorbing runoff, cattle grazing

**Goals:** Practice sustainable agriculture: intercropping, Create riparian buffers (reforestation)



# Problem 3: Fecal Coliforms in Water

- Septic systems: overflow or leaching of human waste into the environment.
- 57% of household samples had total coliform bacteria above the Costa Rican standard for safe drinking water exceeding the single standard limit of zero, while 61% failed the World Health Organization standard for fecal coliforms exceeding the single standard limit of zero.
- Causes: poor construction, lack of regular water testing, depleted water table
- Goals: more water testing, better standard definitions for water quality in costa rican government, fix problematic septic systems





# Goals

- Establish better water quality definitions for the region
- Establish more frequent water testing
- Implement sustainable agriculture and livestock practices
- Reduce erosion
- Improve water flow year round

# Conclusion

- The Nandamojo River Basin is a vital part of Costa Rica. It provides water, food, and vast economic benefit.
- The Nandamojo Action Plan's goals focus on addressing some of the main problems with a watershed approach that directly involves the community and world water standards.
- If the Nandamojo can restore year round water flow and water quality, not only will quality of life improve, it will open up the region to opportunities of economic growth. Many parts of Costa Rica have benefited from ecotourism.
- ecotourism has improved the quality of life of Costa Ricans living in areas close to parks and protected areas by 16%