

# Freshwater Engineering Project List

Examine one location and water-based problem. Brainstorm potential solutions for this problem, and discuss how engineering was used to actually solve this problem.

## North America

**Client Name:** *City of Calgary (Alberta, Canada)*

**Basic problem:** The City of Calgary needed to increase the capacity to treat all the wastewater the people of Calgary were producing. The city turned to the Bow River as a new outlet on which to build an additional wastewater treatment plant. However, Bow River is a world-class sport-fishing river, so the liquid waste from the plant had to meet strict requirements before being discharged into the river.

**Group Discussion Question(s):**

- 1) How could the solution meet the city's goal of reducing the use of potable water for non-potable needs?

**Client Name:** *City of Aurora (Colorado, U.S.)*

**Basic problem:** The city of Aurora needed to supplement its water supply. Severe drought conditions prompted the city to look for ways to supplement its water supply that would protect residents and businesses during droughts and meet future needs without seriously impacting the environment.

**Group Discussion Question(s):**

- 1) What is drought?
- 2) What are its causes and consequences?

## Africa

**Client Name:** *Indigenous Education Foundation of Tanzania (IEFT) via Engineers Without Borders- USA Portland Professional Chapter (Lashaine Village, Monduli District, Arusha Region, Tanzania)*

**Basic problem:** Due to the absence of permanent surface water or groundwater aquifers, the people of Lashaine depend on seasonal watering holes (large depressions where water collects during the rainy season) as the village's only water resource. Humans, livestock, and wildlife share these watering holes. The watering holes often dry up during the dry season, leaving the villagers with contaminated water stored in tanks or having to ship water from neighboring villages.

**Group Discussion Question(s):**

- 1) Why do we need to share resources with animals, both wild and domestic?



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# Freshwater Engineering Projects, continued

## Europe

**Client Name:** *Thames Water (London, England, U.K.)*

**Basic problem:** The lack of capacity of London's 150-year-old Victorian sewer system is currently causing weekly sewage discharges to the tidal area of the Thames River.

**Group Discussion Question(s):**

- 1) What are the impacts of a growing population on a finite area?

## Asia

**Client Name:** *USAID (Sri Lanka, Maldives)*

**Basic Problem:** When a 9.3 magnitude earthquake hit the western coast of northern Sumatra in December 2004, it created the single deadliest tsunami in world history, with over 200,000 people dead or missing and over 1.5 million displaced. The country's infrastructure was considerably damaged.

**Group Discussion Question(s):**

- 1) What systems might need to be built or rebuilt in the wake of a deadly tsunami?

**Client Name:** *Gippsland Water (Traralgon, Victoria, Australia)*

**Basic Problem:** The client was concerned with the impacts of drought and climate change on Australia's water supply systems.

**Group Discussion Question(s):**

- 1) How might the impacts of drought and climate change be reduced through new water systems or facilities?