Strangers had poured pesticide into the river two months ago to stun the fishes, making them easy to catch. "Ikan mabuk," he said in Malay, which literally means "drunken or intoxicated fish. "The water was calm and clear. But the fishes were violently flipping in and out of the water. The next day, all the dead fishes were floating on the river.

FISHERMAN ZAIHAN TAHIR

On Johor River's TRAIL of waste and worries

Last month, The Sunday Times cruised down Johor River by boat and travelled down the road along Sayong River by car to find out the sources of pollution there and how residents were coping. Johor River is the main river which supplies water to Singapore and southern Johor, and Sayong River is its tributary. The team also visited other troubled waterways not linked to Johor River, such as Kim Kim River in Pasir Gudang and Ulu Benut River in Simpang Renggam.

1 Kampung Murni Jaya

The trail begins here on Sayong River, a tributary of Johor River. In November 2017, a poultry farm and fertiliser factory located on the river bank in this village had to halt operations after high ammonia content was found in the river. Residents have also complained of indiscriminate dumping of pesticides and chemicals here.

2 Sedenak palm oil mill

In April 2019, a reservoir at a bio-composite centre next to an oil palm mill in Sedenak had burst, leaking ammonia-contaminated water into Sayong River.

3 Kampung Sayong Pinang

The Orang Asli community here has complained of waste discharged by palm-oil refineries flowing into Sayong River, polluting it and killing fishes and prawns.

4 Kampung Pasir Intan

Another Orang Asli settlement, where signs of sand extraction could be seen. Unregulated sand mining not only pollutes Sayong River, but also changes its course and causes it to dry up.

5 Linggiu Reservoir

Constructed by PUB under a 1990 agreement with Johor, supplementary to the 1962 Water Agreement, the Linggiu water catchment reservoir is located upstream of the Johor River Waterworks and releases water into the Johor River to supplement its flow.

7 Kampung Sungai Telor

Setting off from a jetty in Kampung Sungai Telor, in Kota Tinggi, The Sunday Times team cruised 8km downstream to the sprawling Singapore PUB's Johor River Waterworks (JRWW).

8 Johor River Waterworks (JRWW)

Owned and operated by Singapore's PUB, raw water from the Johor River is abstracted here.

9 Kota Tinggi town

An hour's drive from Johor Baru, Kota Tinggi is a town and capital of Kota Tinggi district. Johor River flows through this town.

10 Kulim Eco-Trail Retreat

Swathes of forest and oil-palm plantations flank the Johor riverbanks in many sections, some accessible only by unpaved dirt roads. Here at Kulim Eco-Trail Retreat, campers can enjoy a quiet retreat in an oil-palm estate overlooking the Johor River.

11 Tanjung Langsat

The mouth of Johor River, near Tanjung Langsat, which is a main industrial area and port in Pasir Gudang, Johor Baru District, Johor.

6 Semangar water treatment plant

One of the water treatment plants along the Johor River that was shut down temporarily on several occasions due to excessive amount of ammonia found in the water.

12 Kampung Pasir Putih

Trail ends here. The Johor River flows into the Johor Strait, which separates Singapore and Peninsular Malaysia.

Singapore's Water Story

Singapore has **4** water sources known as the "four national taps". Its water supply comes from local reservoirs, imported water, reclaimed water known as Newater and desalinated water.

Under the **1962** Water Agreement, Singapore is entitled to draw **250 million gallons** of raw water a day from Johor at three sen per 1,000 gallons. However, Johor is also entitled to buy 5 mgd of treated water from Singapore at 50 sen per 1,000 gallons, a fraction of the true cost of treatment.

Under the same agreement, which will expire in **2061,** Singapore is obliged to provide Johor with treated water up to 2 per cent of the water it imports.

Water demand in Singapore is currently about **430** million gallons a day, which is enough to fill 782 Olympic-sized swimming pools. Homes consume 45 per cent of the water while the non-domestic sector takes up the rest.

By **2060,** Singapore's total water demand could almost double, with the non-domestic sector accounting for about 70 per cent. By then, Newater and desalination will meet up to 85 per cent of Singapore's future water demand.

Singapore's per capita household water consumption was reduced from 165 litres a day in 2003 to 143 litres in 2017. The target is to lower it to **130** litres by 2030.

Source: National water agency PUB website

ST PHOTOS: KELVIN CHNG, ARLINA ARSHAD, ALPHONSUS CHERN
SUNDAY TIMES GRAPHICS