



**Water & Waste Management**

# **BioSpikes® 5000**

**Pulp and Paper**

Case study: Canadian pulp mill uses BioSpikes® to reduce sludge and gain lagoon capacity

Rethink Tomorrow

novozymes 



A Canadian pulp mill was able to reduce sludge and increase lagoon capacity by 2000 m<sup>3</sup> with BioSpikes®.

## Benefits

- **Reduction of sludge in some areas of 1.5 m**
- **Average sludge reduction across treated area was 0.75 m (2.4 ft)**
- **Increase in lagoon capacity of 2000 m<sup>3</sup> (54,000 ft<sup>3</sup>)**
- **No deterioration of effluent quality**

## Background

For decades, a Canadian pulp mill has been accumulating solids in its aerated wastewater lagoon. Lately, this buildup reduced the capacity and retention time in the lagoon and began affecting effluent quality. They turned to Novozymes for help.

Novozymes assessed the lagoon, which at one end had as little as 0.5 m (1.6 ft) of freeboard on a 4 m (13 ft) depth, or 3.5 m (11.4 ft) of accumulated sludge.

To degrade and compact the sludge, increasing treatment capacity and further delaying the need to ultimately dredge the entire lagoon, the use of BioSpikes® was proposed.

## Application

50 cases of BioSpikes® were applied over a 5-acre zone in April 2019. The spikes were applied several times between April and July.

A local engineering company performed a bathymetric study and returned to the plant for re-measuring, after the treatment with BioSpikes®.

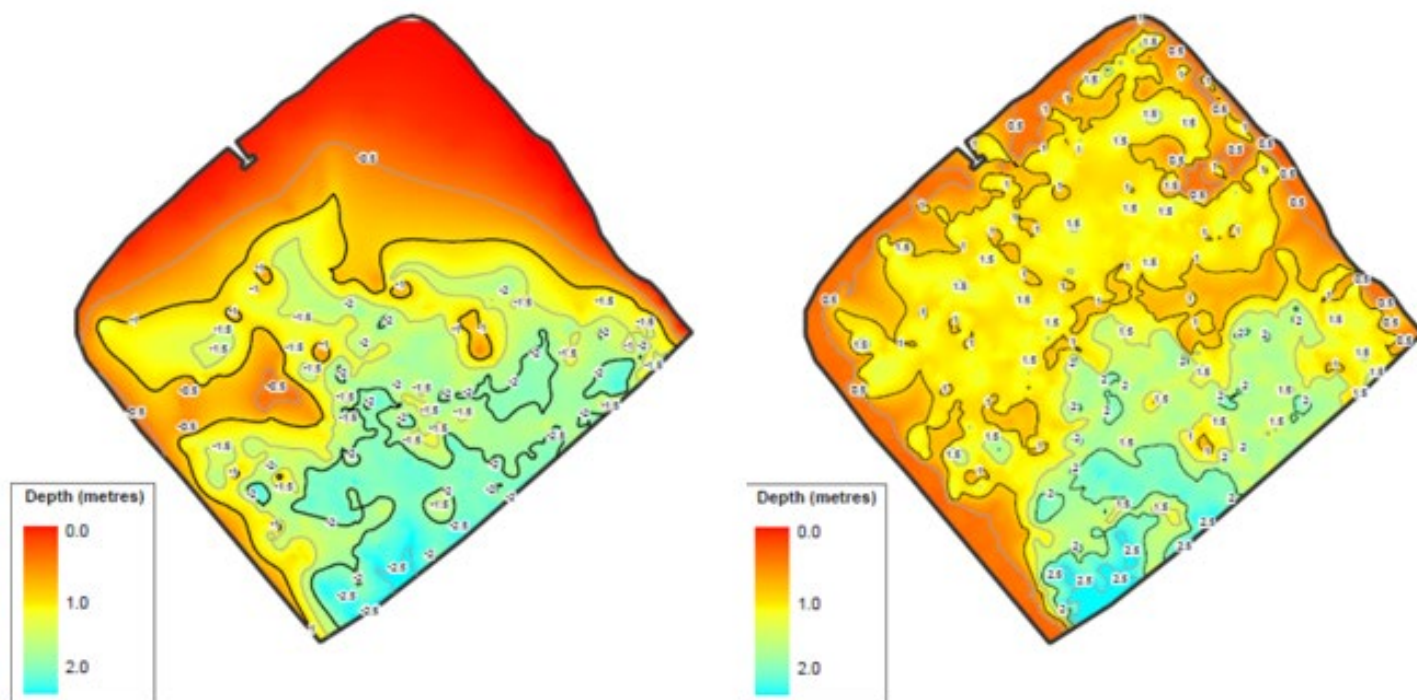
## Results

An increase in lagoon capacity of nearly 2000 m<sup>3</sup> (54,000 ft<sup>3</sup>) was recorded. Several areas showed a sludge reduction of more than 1 m (3.2 ft) while average reduction across the lagoon amounted to 0.75 m (2.4 ft).



April 2019

October 2019



**Fig. 1.** Increase in lagoon capacity from BioSpikes® application

#### Legend

- Contour (1m interval)
- Contour (0.5m interval)

Basin Capacity	
April	26,154 m <sup>3</sup>
October	28,125 m <sup>3</sup>

#### Note

- 1) Basin capacity table: The volume of water present between the sediment/water interface and surface water elevation on the date of sampling. Basin capacities are presented for the surveyed portion of the pond only.
- 2) Surface water elevation was 38.30 cm below the reference elevation benchmark on October 18, 2019. Surface water elevation was not surveyed during the April 2019 site visit.

## Conclusion

The treatment with BioSpikes® to the pulp mill's lagoon system successfully increased retention time and improved effluent quality. This implied a delay of a potential dredging project, which could have costed the plant several million dollars.



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#### About Novozymes

Novozymes is the world leader in biological solutions. Together with customers, partners and the global community, we improve industrial performance while preserving the planet's resources and helping to build better lives. As the world's largest provider of enzyme and microbial technologies, our bioinnovation enables higher agricultural yields, low-temperature washing, energy-efficient production, renewable fuel and many other benefits that we rely on today and in the future. We call it Rethink Tomorrow.

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