

Sludge Reduction & Wastewater Treatment Optimization in Sewage Lagoon © 2009

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ECOPROBIOTICS®, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. ECOPROBIOTICS® increase biodiversity. Just as people take probiotic yogurt for its' ability to assure the presence of the optimal community for digestion and immunity, ECOPROBIOTICS® improve ecosystem health. EVERY PRODUCTION of Bacta-Pur® products is analyzed and cleared for shipment ONLY after passing all performance tests and being CERTIFIED PATHOGEN FREE using techniques from the food industry. ECOPROBIOTICS® are purely natural and beneficial; they NEVER contain added chemicals such as surfactants, emulsifiers or enzymes..., nor do they contain genetically modified (GMO) or deliberately mutated organisms. ECOPROBIOTICS® are safe and beneficial. Disease causing organisms are never used, as others do or permit. All bacterial cultures in the Bacta-Pur® product are listed on the Canadian DSL.

Background

The wastewater treatment plant in Ville de Caraquet, New Brunswick consists of one 12.5 acres aerated lagoon and a 12.5 acres polishing cell. The facility treats mainly the domestic wastewater, but periodically accepts as well the septic waste from haulers. The average dumping varies between two to three million gallons per year. The septic waste discharge causes sudden, temporally lagoon overloading, which is accompanied with high solids build up at the entrance of the first lagoon. Moreover, the important sludge build up resulted in significant odor problems.

Treatment

The Bacta-Pur® treatment was proposed in order to supply the lagoon with community of beneficial bacteria capable to solubilise the organic solids and accelerate the removal of soluble organic pollution. The treatment has been realized in two phases.

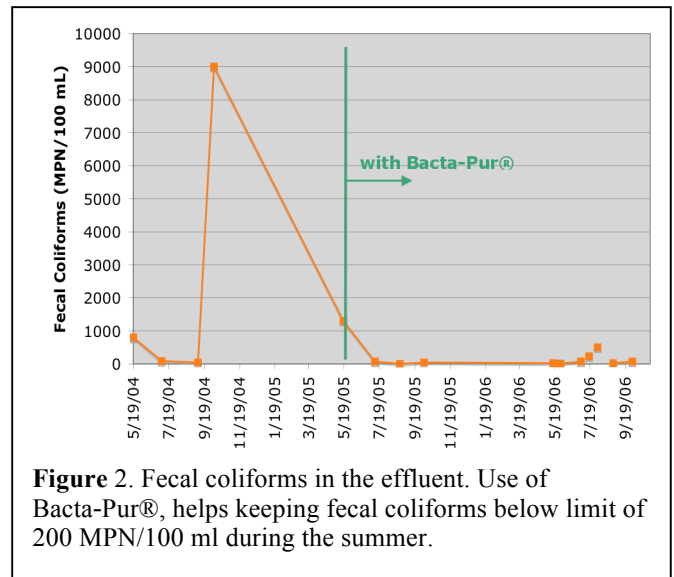
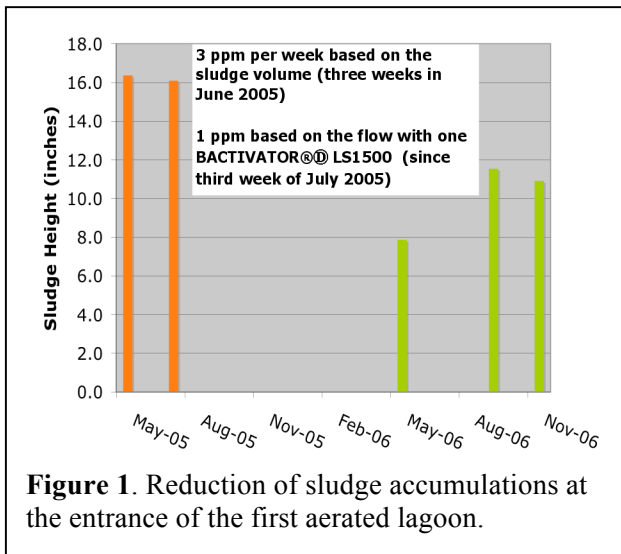
The first phase and implied the manual pre activation and application of beneficial bacteria directly into the waste water and sludge. The first manual treatment has been done in early June 2005. The pre activated Bacta-Pur® XLG has been applied directly into the sludge at the entrance of the lagoon, at dose rate of 3 ppm, based on the estimated volume of the sludge. After 10 days the same quantity of Bacta-Pur® XLG had been applied at the lagoon surface on sides and corners. Finally, the last manual application was realized at the lift station, located about two kilometers upstream of the wastewater treatment lagoon.

The second phase of the treatment consisted of the continuous addition of beneficial bacteria cultures in sewer upstream of the lagoon. The upstream inoculation has been recommended in order to help to reduce the organic loading coming into the lagoon, and therefore minimize the sludge build up and occurrence of nuisance odors, while in the same time optimizing the wastewater treatment. One BACTIVATOR® LS 1500 has been installed in early July 2005 in one lift station upstream of the wastewater treatment lagoon. This unit continually inoculates the wastewater with 0.8 ppm of Bacta-Pur® XLG, based on the average daily flow. The BACTIVATOR® preactivates, grows and optimizes the physiological condition of the cultures prior to their introduction into the waste water.



Results & Conclusions

The sludge survey was performed by one consulting company. The sludge thickness was measured before, during and one year after manual applications. The locations for measurements had been determined at a uniform grid consisting of eleven points. All measurements had been averaged to produce an average sludge layer thickness. The Figure 1 shows the average sludge thickness one month before, during and one year after starting with Bacta-Pur® treatment. It has to be mention that 600,000 gallons of septic waste was bumped at the entrance of the lagoon after the first application of Bacta-Pur® cultures and therefore no significant sludge reduction has been measured after one month of the treatment. But, the reduction of sludge thickness of 8 inches (21 cm) was measured during sludge survey realized one year after starting with Bacta-Pur® treatment. During the summer 2006, the sludge thickness slightly increased as dumping of septic waste has been started again and no manual applications in lagoon have been done during this period.



The Bacta-Pur® treatment, now in service for four years, optimizes the wastewater treatment to the point that no chlorine has to be used at the effluent of polishing cell in order to keep the number of fecal coliforms below the limit during the summer period (see Figure 2). That means the dumping less chemicals in the Bay des Chaleurs.

