

SCD Probiotics®

Case Study Summary – Remediation of Water with Pathogens and Copper Using SCD Probiotics® in a Lake Park

Wastewater - Pathogen control and copper remediation (CSS-029-09)

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Industry: Wastewater
Products: Bokashi balls), Activated Charcoal with SCD Bio Klean™ and SCD Bio Klean™
Application: SCD Probiotics® Technology applied at strategic locations in the lake

Highlights

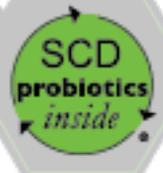
- *E. coli* reduced from 4,433 MPN/100mL to 8 MPN/100mL, Enterococcus reduced from 4,333 MPN/100mL to 3 MPN/100mL and Total Coliform reduced from 15,300 MPN/100mL to 30 MPN/100mL
- Copper value dropped from 235 µg/L to 140 µg/L to be within the city standards (200 µg/L)

Introduction

The lake under study is a man-made lake, approximately 2.5 acres in size and 9 ft. deep, located in a recreational area. The lake is polluted from bird droppings and the decomposition of food that has been scattered in the water by visitors who feed the birds (see Table I on the following page). SCD Probiotics products will be applied to the lake with the objective to improve the parameters causing the lake to be polluted. Specifically, the lake water should meet or exceed the city standards for lake water quality in order to be consistent with the city standards established by the Department of Natural Resources (see Table I on the following page).

Methodology

A baseline measurement of metals and pathogenic microbes was established prior to the treatment of SCD Probiotics products and technology. All samples were analyzed for total *E. coli*, Enterococcus, and Total Coliform bacteria, as well as copper. Copper is one of the noticeable elements found in the lake. It is an essential nutrient at low concentrations, but toxic to aquatic organisms at higher concentrations—making it necessary to monitor its levels. The microbial culture formulation and application process were designed and developed by the SCD Probiotics technology team. A solid microbial culture (Bokashi Balls) was placed at various strategic locations along with activated wood charcoal (Inoculated Carbon with SCD Bio Klean), and a liquid microbial culture (SCD Bio Klean) was injected at the aerator unit. Samples at six locations around the lake were taken.



Results

The table below represents the significant improvement in water quality at all levels, with sample results testing far below the City Standards. These are known parameters that are measured and observed in water quality improvements on any type of body of water. There has been a drastic reduction in the number of pathogens measured after the SCD Probiotics application. *E. coli* was reduced from 4,433 MPN/100mL to 8 MPN/100mL, Enterococcus was reduced from 4,333 MPN/100mL to 3 MPN/100mL, and total coliforms were reduced from 15,300 MPN/100mL to 30 MPN/100mL. Copper, which was initially measured at a (most likely toxic) level of 235 µg/L was lowered to 140 µg/L, which is within the city standards (200 µg/L).

Table I: Water Quality Improvements at the Lake based on SCD Probiotics Application

Parameter	Baseline	After SCD Probiotics	City Standards
	Geometric Means	Geometric Means	
Copper (µg/L)	235	140	200
<i>E. coli</i> (MPN/100mL)	4433	8	576
Enterococcus (MPN/100mL)	4333	3	104
Total Coliforms (MPN/100mL)	15300	30	1000

Average of 6 samples prior start SCD application in North, South, East, west and Center of the lake.

South side which is where the majority of ducks, geese, and other bird life enter the lake.

Conclusions

Based on the results of the trial, it can be expected to see improvements in water quality after an SCD Probiotics application—with a main focus on the reduction of copper levels and pathogen counts. The results from this trial could be considered baseline information in treating similar types or other types of bodies of water.

