



FIXING THE ENVIRONMENT

Acid Solutions®

Contaminated Water Treatment

Blue Green Algae Treated for Toxins and Suspended Solids to allow irrigation disposal. February 2009

Name	Natural Solutions Consultants
Site Location	Noosa, South East QLD
Site Problem	Blue Green Algae, Toxins and Suspended Solids
Water Volume	2.4 Megalitres
Water pH	6.55 pH
Acidity	NA
Suspended Solids	Above irrigation license limits
Treatment Objective	Environmental Protection/irrigation Release
What is causing the problem	Contamination from site runoff and high Nutrients
Dams/Pits	1
Length of water body	80 metres
Width of Water body	20 metres
Water Depth	1.5 metres
Bottom Type	Constructed dam with snags
Aquatic Flora	No
Vehicle Access and Flora	Road access no Flora
Environmental Sensitivity	Contained and Controlled without rainfall
Aquatic Life	None
Drains or Streams nearby	Yes – environmental risk
Regulatory requirements	Yes - discharge
Urgency level	Urgent

1 INTRODUCTION

Acid Solutions was requested to provide treatment of Blue Green Algae and suspended solids contaminated water at a construction site in Noosa, Queensland.

The site was catching nutrient rich water and sediment from a nearby construction site and golf course after heavy rainfall. The site developed a Cyano Bacteria outbreak over several months.

Treatment was required to improve quality and remove toxins and suspended solids to allow dewatering and irrigation disposal and eliminate the chance of wildlife poisoning from algal toxins.



2 OVERVIEW

Approximately 2.4 Megalitres was contained in a pit 80 metres by 20 Metres and up to 1.5 metres deep. Water was to be treated to reduce suspended solids and remove algae and toxins to allow dewatering.



3 TREATMENT METHOD

Acid Solutions used its patented water treatment technology called the CRAB™. The Calibrated Reagent Applying Blender. The Acid Solutions CRAB™ system provided a fast and highly efficient method to deal with this contamination.

4 WATER QUALITY OBJECTIVES

Lab analysis indicated that Blue Green Algae Cell counts were 117,000 - 199,000 cells/mL (*Cylindrospermopsis raciborskii*) with a potential toxicity of 30 ug/L (Cylindrospermopsin). Water was required to meet irrigation quality to allow dewatering and safe disposal.

5 TREATMENT REAGENTS

The process flocculated suspended solids and Cyano Bacteria and absorbed the toxins with a two stage process. The two processes were staged to provide high efficiency and maximum removal of algae and toxins while using the minimum reagents. The reagents used provided cost efficient and safe removal of contaminants to the required quality.

6 POST-TREATMENT RESULTS

ANALYTICAL REPORT

Number of Samples Received : 1

Method(s) of Analysis :
Microcystins

The sample was analysed using a preconcentration technique followed by HPLC with diode array detection (QIS Method 15605).

Algal cells in the sample were lysed by freeze/thawing before analysis.

Cylindrospermopsin

The sample was frozen and thawed to lyse any cells present and analysed using HPLC/Electrospray/tandem Mass Spectrometry (QIS Method 15506)

Lab. Ref.	08KP749	
Client Reference	J030197	
Sample	Water	
Description	Elysium, Noosa	
	Units	
Microcystins	µg/L	< 0.5
Cylindrospermopsin	µg/L	< 0.2

Comments:

Limit of reporting for individual microcystins (estimated from response to Microcystin LR Standard, Calbiochem Lot B28160) is 0.5 microgram/Litre of water. Microcystins if present in the sample are reported as total microcystins expressed as microcystin LR. There are in excess of 40 known microcystins but it is uncommon for a given algal bloom to contain more than 10 microcystins at detectable levels.

Limit of Reporting (Cylindrospermopsin): 0.2 micrograms per Litre

7 TREATMENT RESULTS

The two day treatment resulted in the required reduction of contaminants and allowed the client to dewater and dispose of the water via irrigation to allow works to recommence.



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