



Mauritius Research Council

Recycling of waste water, agro- industrial effluent, sewer and sludge for the establishment of an integral artificial wetlands

Final Report: Phase ONE

November 1999

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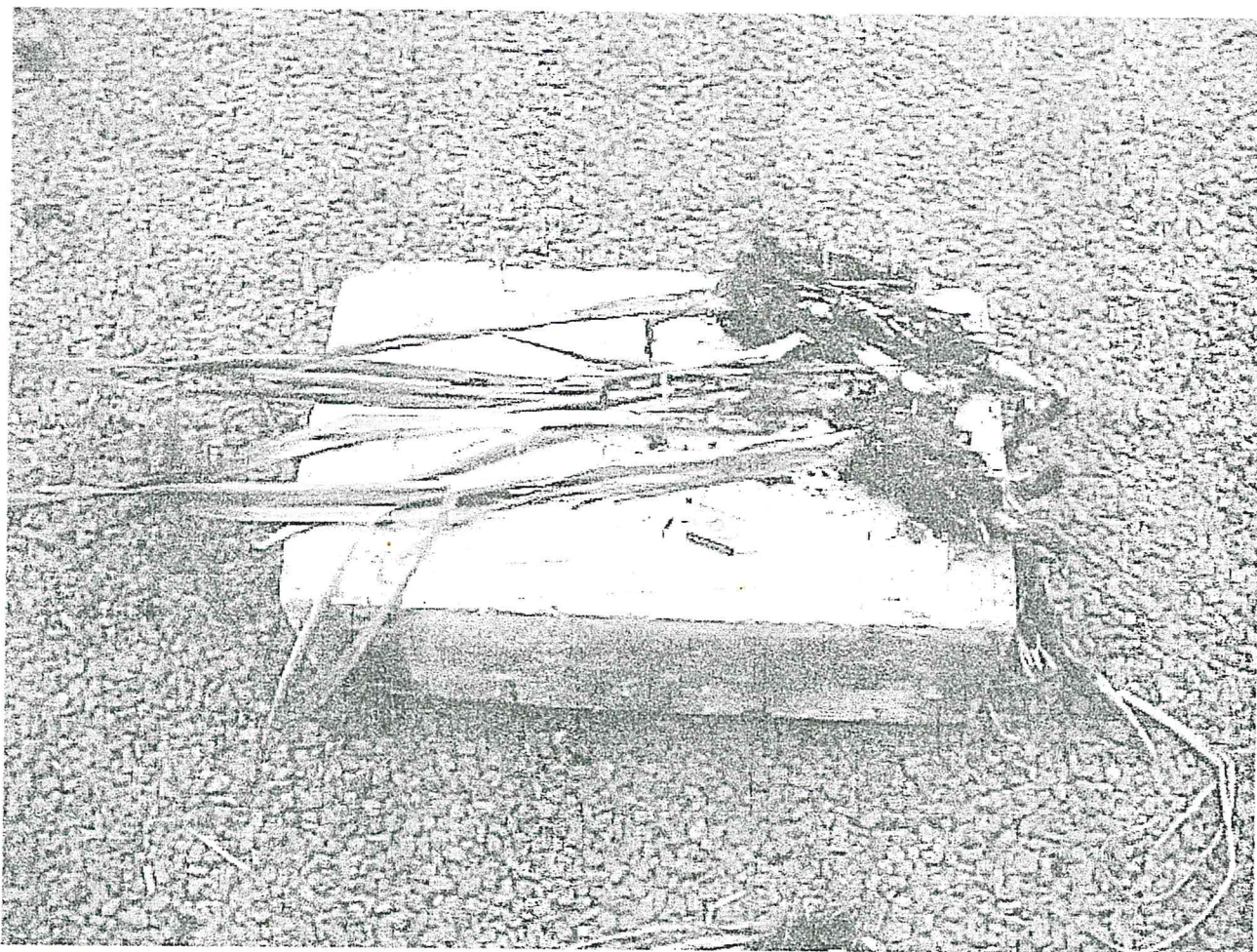
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FINAL REPORT: PHASE ONE

Recycling of waste water, agro-industrial effluent, sewer and sludge for the establishment of an integral artificial wetlands



REEDS VOON.

PROJECT INVESTIGATOR KHEMRAJ SOOKNAH

EXECUTIVE SUMMARY

The availability of fresh water is becoming a major concern for everyone on the island of Mauritius. The severe drought, which is prevailing on the island of Mauritius, has affected our agriculture and may lead to severe environmental problems.

This research was based in developing a model for reuse and recycling of grey water, sullage. It is estimated that an average person utilises 200 litres of water per day. At least 65% of this volume is converted into grey water, which is released directly into the environment. Sullage can be purified using a biological process, which takes place in the root zone areas of reeds, an aquatic plant locally known as voon.

The use of reed bed technology is an appropriate system, which can be utilised for the re use and recycling of sullage. The proposed model has been innovated to meet the specific needs and can be adapted to various sites. The setting up of the reed bed biotechnology is very cost effective and does not require any major investment nor any major civil engineering work. We hope that this biotechnology can be miniaturised to meet the requirements of an average household.

Many have helped in working out the details of this project. Some have even provided their valuable and precious time in advising us. We express our sincere thanks to all of you.

This project has provided a valuable platform for team building and development of biotechnological awareness. We acknowledge the valuable input of the following institutions and individuals.

- 1) The Mauritius Research Council.
- 2) The University of Mauritius ,
- 3) Waste Water Authority,
- 4) Mauritius Institute of Education,
- 5) Ministry of Environment,
- 6) ISKON
- 7) Human Service Trust

Dr A Soodoo, K. Heeramun , Dr Ramjeeawon , Dr Allybacus , Dinesh Oodit , Reshad Lalloo , Dr P. Chintamun , and the project team.

The project team comprised of : Khemraj Sooknah , Dinesh Oodit , Praveen Goorah , Subash Beeknoo , Shalini Ramloll, Vikash Keetaruth
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*Narendra Sharma Ramchurn , Executive Chairman
Mauritian Wildlife Club.
November 1999*

1:0 INTRODUCTION.

The Mauritius Research Council approved and provided funding to the Mauritian Wildlife Club for the Phase One of the following project.

Recycling of wastewater, agro-industrial effluent, sewer and sludge for the establishment of an integral artificial wetlands and wild fruit orchard model.

The phase one of the project started as from April 1999 and is ongoing. During the past seven months the following progress has been attained but certain difficulties were also encountered.

1:1 LESSONS LEARNT THROUGH PHASE ONE OF THE PROJECT.

- 1) The scope of the project was limited to the processing of grey water, sullage. The idea of including the treatment of sewage may be undertaken at a later stage
- 2) The project title was redefined as follows

*The Recycling of Sullage (Waste Water)
Using A Biological System
Based On Wetlands And
Reed Bed Technology to
Improve Water Quality For
Agriculture, Agroforestry.
Wildlife Management And
Conservation of Natural Resources*

- 3) The reuse and recycling of sullage was studied. Uses of sullage for agriculture, aquaculture and wildlife management was taken into consideration.
- 4) A biological model for the processing of sullage was developed.
- 5) The biological model was tailor made to suit the needs for two specific sites of study.
- 6) The sites for study was selected on the basis that sullage will be available through out the year at a constant rate and can be utilised for agricultural and wildlife management project
- 7) The proposed sullage-processing unit is environment and user friendly.
- 8) No major civil engineering work will have to be undertaken. Locally available materials will be utilised and adapted to meet the needs of the project.
- 9) The proposals made for setting up the sullage processing plant at ISKON and the Human Service Trust will require constant monitoring and observations during at least a one-year period.
- 10) This project has allowed the opportunity to brainstorm and discuss several issues, It has enable several scientists of different background, administrators and educators to work together. This experience is second to none.

11) This project has kept its originality and uniqueness, as it will be for the first time that artificial wetlands will be utilised to process sullage.

1:2 The Need For Action.

Through this study, we have consulted several resource persons and institutions both locally and internationally based. We now have the assurance that the proposal can be set up as an experiment and demonstration unit. However, the periodic review and monitoring will be required.

2:0 PROGRESS:

PHASE 1 OBJECTIVES.

The objectives to be attained at the end of Phase 1 of the proposed project are as follows. Progress and difficulties have been highlighted.

1) To establish a data bank on the principles and practice ,
This objective has been gully attained. A data bank in both electronic and paper bounded forms is now available.

2) To set up a website for exchange of data and information.

This objective is in progress but we are encountering several technical problems with the hardwares .

3) To undertake intensive literature search,
This objective has been attained.

4) To prepare guidelines for the development of the proposed model
The project report outlines the model and its functions.

5) To compile a list of all plants species to be utilised for the project.

Only two plants are best suited for the proposed project . 1) Reeds and 2) Water hyacinth.

6) To identify the various sources and suppliers whereby the plants, Materials and other products to be utilised for the project.

This exercise is in progress and is on going

7) To co-ordinate with resource persons and undertake follow up on Suggestions.

The following resource persons have been contacted and the proposed suggestions were studied.

Mr Lalloo Director of the Waste Water Authority .

Dr Allybacus. Dr Ramjeeawon , Dr Rughooputh , of University of Mauritius

Prof. Adrian Mcdonald of Leeds University.

Several technicians of the Tetrabel Company . The company, which will be implementing the sewerage, master plan.

Mr Dinesh Oodit . Final year Civil Engineering student of the University of Mauritius was delegated by Dr Ramjeeawon to assist in the design of the project.

8) To survey grassroots and socio-cultural practices.

Consultation with Mon Loisir Sugar Estate , Hare Rama Hare Krishnah Ashram , Human Service Trust. Poultry farms at Petite Ratraite and pig farm at Roches Noire have been made.

3:0 CONSTRAINTS AND DIFFICULTIES.

1) The study is being restricted to the recycling of wastewater from Agro-industrial effluent, kitchen and domestic waste, and animal farms.

It was concluded that sewer must be excluded from the study as this issue was very sensitive to the public.

2) Professor Georges Chan was not readily available, as he has been overseas.

3) As there is very little information available on the systems, we had to rely on availability of information and data from abroad, mostly United Kingdom and USA. This process is a bit slow and restricted for certain projects.

4:0 TRAINING.

Training was provided to several project assistants in the fields of data search. Setting up of softwares and PC Operations.

A questionnaire was designed for the project.

Further studies may be undertaken for the processing of sullage from NHDC Complexes and the Improvement of water quality in the canals of Port Louis. (By Museum, Rogers House). Using wetlands systems.

