Newsletter of the V.I. Planning Office and the V.I. Water Resources Research Center

WAA TA

Caribbean Research Institute
College of the Virgin Islands, St. Thomas, U.S. Virgin Islands 00801
809/774-1252 Ext. 250

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CISTERN MICROBIOLOGY STUDIES

Dr. Harvey Winters and Richard Isquith of Fairleigh Dickinson University, with WRRC support, is conducting a study of the microorganisms in domestic cistern water supplies in the Virgin Islands.

The classic triad of water-borne diseases are enteric fever, bacillary dysentary and cholera. These diseases are controlled in public water supply systems through the use of chlorine. Cisterns are a major source of water in the VI and water in these cisterns are not chlorinated or covered by the Safe Drinking Water Act and therefore might be an adverse impact on public health.

The analysis is focusing on an overall assessment of the types of heterotrophic bacteria and algae and protozoa found to occur. The bacterial study is directed towards those organisms capable of causing disease in water supplies while the algae and protozoa study will be used to indicate the level of microbial diversity as well as to identify any of the eucaryotic organisms which can be pathogenic to man. Direct examination of the cistern waters for sedimentation floculation, and odors will dictate if a search should be made for other groups of bacteria such as autotrophs.

The results of the research will suggest if any steps should be taken to insure that cistern water supplies have no adverse impact on the public health.

RUNOFF STUDY COMPLETED

The Ecological Research Center in cooperation with the Water Center has completed a study on the effects of rainfall runoff on two bays on St. John, Virgin Islands. Two undeveloped bays were sampled for a one year period. Rainfall and runoff were measured for each of the watersheds and salinity, temperature, nutrient and plankton data were collected from the bays. Runoff into the bay was calculated and its effects were assessed in light of the ecological parameters.

The results were interesting because they indicate that the effects of the runoff on light penetration, salinity, nutrient levels and productivity, as related to plankton numbers, were minimal in the undeveloped bays studied. Changes, when they occurred, were of short duration and generally localized to inner portions of the bays. This is apparently due, in part, to the natural beach berms and low-lying mangrove areas behind the beaches restraining or slowing the runoff water before it passes into the bay. This in turn reduces the fresh water, silt and terrestrially

derived nutrient materials which might be carried into the bay.

The results suggest that care must be taken not to disrupt these natural systems which buffer runoff input into the bays, and that failure to compensate for this phenomenon in developing a watershed may result in changing various aspects of the bays in question. To test this theory, a continuation of the study has begun in a bay which is scheduled for development.

Copies of the project completion report, written by Thomas W. Purcell, are available at the WRRC and may be obtained by calling 774-1252 ext 251 or 259.

PUBLICATION OF SPECIAL INTEREST

Professor Murray Milne of UCLA 's School of Architecture and Urban Planning, mentioned previously in WAA TA' because of his publication Residential Water Conservation, has published another very interesting and useful book. This new 560 page publication is Residential Water Reuse. As described by the "Municipal Wastewater Reuse News"...

This publication represents the final report of a study entitled "Water Conservation Implications of Residential Recycling Systems" and is intended to be a nontechnical report for homeowners, builders, developers, architects, planners, utility company managers, plumbingware manufacturers and lawmakers to help them understand the design and installation of small on-site water reuse systems. Some of the highlights of the report are:

'The argument in favor of water reuse is given along with a brief history of residential water reuse, how rainwater and grondwater can be developed as an on-site supply, the uses of greywater for garden irrigation, various residential-scale systems that have been designed for on-site reuse, and an explanation of the components needed to build such systems.

The book explains the various ways to collect, store, treat and distribute this water, and gives examples of people who have successfully used it for drinking, bathing, washing, landscape irrigation, and toilet flushing. For many of these functions water can be cascaded or reused directly without pretreatment. The appendix contains a 500-item annotated bibliography, a directory of manufacturers and a glossary of specialized terms and units of measure.

Residential on-site water reuse systems are technically feasible and environmentally sound. They are becoming economically attractive because of increasing energy costs for pumping and treatment in centralized water and sewage systems.'

Copies of this publication are available for examination at the WRRC and may be obtained by writing to the Director's Office, Water Resources Center, 2102 Wickson Hall, University of California, Davis, CA 95616. Cost is $10.00.

SOLAR STILL PROJECT APPROVED

The WRRC has been informed that the matching fund grant application to study the feasibility of solar roof stills (described in the last issue of WAA TA') has been approved by the Office of Water Research and Technology. The project will be funded out of the matching fund program for the 1981 fiscal year and is contingent on receipt of appropriated funds by OWRT.

The design concept for the roof still is not targeted towards a highly efficient solar still but rather towards achieving a still in the roof with as little extra cost as possible. Thus the roof will be of traditional design or shape, use locally available building materials and require

little or no special orientation with regard to the sun. The water production penalty that is paid for this approach is that instead of producing one gallon per day of water for each ten square feet of roof area, only 50% of the amount will be produced. Some indication has been that the water production penalty for this type of approach may nto be as high as 50%. In a single test section (12 feet long by 2 feet wide) which was constructed and is operating at the West Indies Laboratory on St. Croix, it was found that the production penalty may not be as high as 50% since this crude test section has experienced a number of days when the production rate substantially exceeded original estimates. As to the quality of the water at the West Indies Laboratory and is producing water of under 30 parts per million totally dissolved solids from untreated seawater.

For those readers who would like to know more about this project, or would like to visit the test section, or who may be planning to build their own solar still, please feel free to contact Don Bullock at the WRRC.

WAA TA' STATISTICS

Rainfall (inches)	April	May
St. Croix		
Cotton Valley	2.33	1.82
East End	2.27	1.02
Sprat Hall	6.92	3.02
St. Thomas		
Fort Mylner	2.28	4.70
Estate Hope	3.55	7.75
Estate Wintberg	2.26	5.03
St. John		
Cruz Bay	2.50	6.16
Catheringberg	3.89	5.42

WAPA Water Production (Gallons)

St. Thomas	28,350,072	31,350,048
St. Croix	31,912,334	6,865,790

CITIZEN'S HANDBOOK

As part of its information dissemination program, the Water Resources Research Center at the Caribbean Research Institute, College of the Virgin Islands has once more made available to the public a publication entitled "Citizens' Handbook: Virgin Islands Water Law". The handbook is an outgrowth of a conference sponsored by the Water Center, the VI Water Resources Commission and the VI Planning Office in June 1978. The conference was tiled "Virgin Islands Water Law: Just Distribution of a Scarce Resourve".

The handbook, written by Attorney Gwenellen Janov, opens by presenting the history of water law in the Virgin Islands. Then appropriation permits are examined Procedures on how to apply for a permit are covered in detail. Sample forms for permit applications are included. Lastly special rules relating to digging, plugging, sealing and capping of wells are discussed.

Copies of the report may be obtained by calling the Water Center at 774-1252 ext. 249 or 251 or by writing: Water Resources Research Center, Caribbean Research Institute, College of the Virgin Islands, St. Thomas,VI 00801