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OVERVIEW OF COMPUTERIZED LABORATORY DATA MANAGEMENT BY WATER QUALITY BRANCH, PACIFIC & YUKON REGION

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Overview of Computerized Laboratory Data Management by Water Quality Branch, Pacific & Yukon Region

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Introduction

A computerized data and laboratory management system has been developed by Water Quality Branch, Pacific and Yukon Region. The system which has been developed is designed to operate independent of data capture activities, relieving the system of real time obligations. The system is self explanatory, hence user friendly. The current implementation is accessed by dialup terminals located in the laboratory to an IBM 4341 located at Simon Fraser University.

This system is unique in a number of aspects. The most noteworth of these are: the manner in which the system is protected from abuse; the automatic creation of fiscal year files; and the handling of replicate data.

System Protection

The system is protected against possible tampering by the use of passwords. Each user is assigned a password of up to 10 characters and a code. The password can be changed by the user. The code allows the user use of only a subset of the system commands. Some commands only allow the user use of a subset of parameters with this subset varying from user to user. The highest level of protection allows the user access to any of the commands available.

Organization and Function

Each sample that enters the lab is automatically assigned a unique sample number (for that fiscal year) for identification. A sample is made up of a number of bottles which are analysed for a specified set of parameters. These bottles also have a number associated with them called the 'bottle number'. This number may be up to ten characters in length and is assigned by the user. Any characters with A-Z, 0-9 may be used in the bottle number. Two bottles within a sample may be assigned the same bottle number provided they go to be analysed for a completely different set of parameters.

A sample cannot have a maximum number of analysis exceeding 5,000 (excluding repeats). A parameter - bottle number pair can have up to eight repeat values so that there is a maximum of 45,000 analysis for each sample.

A parameter is a six digit Naquadat code from the Naquadat Dictionary or a user specified code. Various data are stored for each parameter including the parameter number, description, and the information needed for lab evaluation and monthly/yearly statistical reports.

Each sample is associated with a project study. This permits the costs of analysing a sample to be assigned to the appropriate project/study.

When samples are to be entered into the system and there are more than one sample to be analysed in the same manner, a 'scheme' can be set up.

A scheme is simply a list of the parameters associated with each type of bottle within the sample. Schemes are used for efficiency and are a time saver for the user.

Limits of System

For any one fiscal year there is a finite number of samples which can be analysed. These 'samples' are a collection of 'bottles' which represent a point in space in time. Replicate parameters are handled within each sample. The system will also allow repeat analysis values to be stored. The limits on these are:

number of samples/fiscal year	215,000
number of parameters (including replicates)/sample	5,000
number of repeats per parameter	8

Limits of Implementation

The ** system was written in Fortran IV for use on the MTS (Michigan Terminal System).

All scratch and data file assignments are done automatically and created when needed. The program is system dependent and uses a variety of system subroutines. It consists of a main program, data files and a library of command subroutines.

Output Compatibility

Data contained within this system is ultimately destined for NAQUADAT. The system produces NAQUADAT records for all samples which have all results approved. During this stage replicate data are reduced to a single value. All data are placed in project files suited to the users needs, allowing replicate data to be manipulated as appropriate.