

MICROCOMPUTERS IN REGULATORY COMPLIANCE¹

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Abstract.--Microcomputers, using existing software, may be cost-effective tools for permitting and regulatory compliance. Their use also forces the organization of data and decreases dependence upon the knowledge of individuals for regulatory compliance activities.

INTRODUCTION

Microcomputers can be used effectively for regulatory compliance in a number of ways. The simplest and perhaps most important use is as a word processing machine for permit application preparation. The ability to quickly correct or revise application materials has been helpful to most of us. A pitfall to avoid in revising the application through word processing is the creation of a document without benchmarks. The documents submitted for agency approval and changes made in response to agency comments should be permanently filed both on computer disk and in hard copy format. We have found that microfilming these critical stages of the permitting process is an inexpensive and effective means of maintaining hard copies of the documents for future reference.

The second most common use of microcomputers in regulatory compliance activities may be the spreadsheet. Nearly every office has Lotus 1-2-3 or equivalent software available for spreadsheet production. Topsoil balances, vegetation statistics, overburden mass flows and summaries of water quality data can be handled efficiently in a spreadsheet format. Additionally, the printed tabular output from such a program is frequently useable for tables within the permit application, minimizing the typing of special charts.

Data bases are used in many offices for administrative purposes, but few have adapted them to

regulatory compliance use. With some care in the selection of software and the structuring of the program to the particular permit, computerized data bases provide a major opportunity for the regulatory compliance staff. Various types of data, including location of monitoring sites; monitoring data, and reporting schedules, can be stored and manipulated as desired.

APPLICATION

Microcomputers provide a vehicle for the organization and retrieval of permitting and regulatory compliance information. They do not, however, do anything that could not be accomplished by a diligent manual compilation, filing and retrieval effort. If you cannot visualize the steps of establishing a manual equivalent of your proposed computerized regulatory compliance system, you should not try to accomplish the establishment of a system on the computer. The real advantages of the computerized system are that (1)it forces thorough organization of all permitting/regulatory information in a single integrated system; (2)it allows anyone trained in the operation of the system to access all records/information incorporated in the system, thereby decreasing reliance on the memory of specific individuals; (3)facilitates manipulation of data, allowing changes in format; (4)decreases time required to locate specific information; and (5)simplifies record maintenance by allowing quick access and easy alteration to files. An additional benefit, perhaps more real than many would like to admit, is that a computerized system provides an impressive show for the boss to give people from the O.S.M. or the home office.

One of the simplest, yet effective applications of a commercial data base to regulatory compliance is the use of FileVision on the Apple Macintosh computer. The package described below can be established for under \$125 in software. This package will run on the minimum Macintosh configuration available from Apple, though a 512K Macintosh and a second disk drive are desirable. FileVision is a visually orientated data base program that allows the linking of many related data bases in a hierarchical (family tree) format.

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A "master menu" or drawing file is first constructed to act as a reference for the specific activities or milestones to be tracked. The simplest form for this menu is a calendar (Fig. 1). If a daily rather than a monthly breakdown is required, one of the computerized appointment calendars should be used. Note that the menu shown here provides for three types of information retrievals; (1) information about each event; (2) summaries by month; and (3) summaries by type of activity. The data base program allows the selected information to be printed in its entirety or to be selectively searched for related information, which can be listed. An abbreviated list of reports and their due dates, shown in Figure 2, is one possible use of the search and list capability.

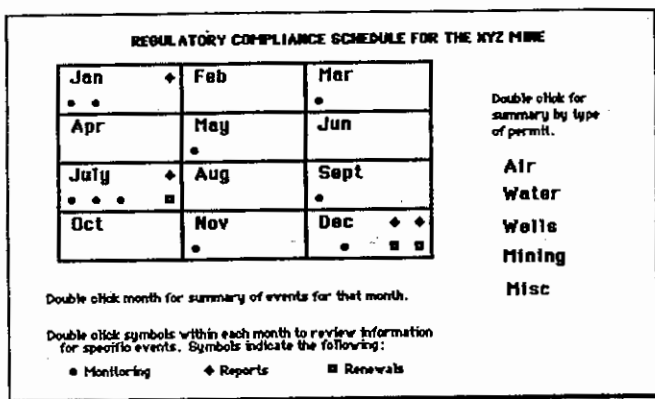


Figure 1.--"Master menu" calendar maintains reference of activities or milestones to be tracked monthly. Activities by type of event (monitoring, reporting, renewal), monthly summaries of events (December monitoring), and monthly summaries by type of activity (air, water, mining, etc.) can be tracked from this form.

Name	DATE	AGENCY
Monitoring, Water Quality Report, Mining Permit	1 - 15	Dept of Environmental Quality
Monitoring, Air Quality	1 - 31	Office of Surface Mining
Monitoring, Water Quality	1 - 31	Dept of Environmental Quality
Monitoring, Water Quality	3 - 15	Dept of Environmental Quality
Renewal, Radio Communications	5 - 15	Dept of Environmental Quality
Monitoring, Water Quality	7 - 10	Wyoming Communications Comm.
Monitoring, Ground Water	7 - 15	Dept of Environmental Quality
Report, Water Quality	7 - 15	State Engineer
Monitoring, Air Quality	7 - 21	Environmental Protection Agency
Monitoring, Water Quality	7 - 31	Dept of Environmental Quality
Monitoring, Water Quality	9 - 15	Dept of Environmental Quality
Monitoring, Water Quality	11 - 15	Dept of Environmental Quality
Renewal, Explosives	12 - 10	County Fire Marshal
Monitoring, Ground Water	12 - 15	State Engineer
Report, Water Quality	12 - 15	Environmental Protection Agency
Renewal, Blasting	12 - 21	Industrial License Commission
Report, Accident	12 - 31	Occupational Safety Agency

Figure 2.--Abbreviated list of various types of activity reports, their due dates, and the agency to which they are to be submitted can be obtained through the search and list capability, starting from the master menu shown in Figure 1.

The strongest feature of the FileVision software is its ability to incorporate graphics. The same technique used to construct the master menu shown in Figure 1 can be used to incorporate sketch maps of sampling locations (Fig. 3) or other locational information.

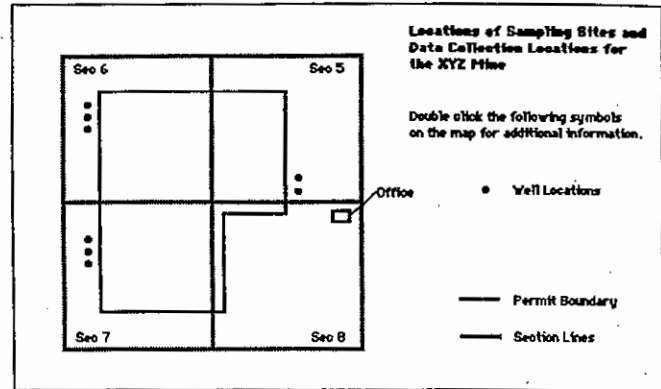


Figure 3.--Computer sketch map showing groundwater sampling locations for a mine permit.

The information in the data base is linked together in a hierarchy, from the most general at the bottom of the trunk, to the more specific at the tops of the branches. The bottom end of a series of linkages could be a record (file) formatted as a monitoring report. This report could be edited, printed, and sent to the home office or a regulatory agency. This type of data base should be supplemented with other software, such as word processing, spreadsheet, calendar, and project management (CPM/PERT) types.

The integrated software packages such as Symphony and Jazz may be attractive for some uses, but those that are based on a spreadsheet as their primary function should be carefully evaluated to determine if their data base functions are adequate. Several compatible programs, as opposed to one fully integrated software package, may better meet your needs. Do not use software already in use in your office just because it is there. If it does not meet your needs, purchase something that does. Software for microcomputers is usually inexpensive when compared to the manpower that may be lost trying to utilize a program not appropriate to the task.

SUGGESTIONS

The first step is to outline your requirements. What features do you want to incorporate into your regulatory compliance system, and what level of automation do you want? Some items to address include the following.

Who are the people that will be using the system? The number of people that will need to access the system, their backgrounds, and their experience with computers should be a major determinant in the degree of complexity you build into your system. Generally, the greater the number

of users and the more diverse their backgrounds, the simpler the structure of the system should be.

What is the level of information that will be required by the users of the system? If the system will be used mainly to monitor permitting activities, the structure should be simple with only concise information about milestones and submittal requirements provided. If it is going to be used to manage all regulatory compliance activities, however, a much more complex system with both detailed and concise information will be necessary.

Hardware and software selection to support the regulatory compliance system should involve the consideration of the following factors.

Single or multiple user access - The typical microcomputer allows only one person to access the information at one time. This can be partly overcome by copying the data onto disks for others to use. However, there is then the risk of people using obsolete information. The use of networks or supermicros may provide multiple access to the data base, but evaluate the hardware/software combination carefully. Some networks do not provide good control over data bases.

Availability of supportive graphics - Graphics can be incorporated into many systems, but the cost, quality and capability may vary greatly. Most data base programs cannot directly incorporate graphics. Data base programs with built-in graphics are common for the Apple Macintosh. The IBM PC requires special hardware/software to handle graphics.

Use of a hard disk - Floppy disks will work with most systems, but many people who use data bases daily find the storage capability of a hard disk desirable, perhaps even necessary, for the type of system with which they like to work. Hard disks are common on the IBM PC, but are not yet a fully proven addition to the Apple Macintosh.

Relational data bases - Some data base software allows the movement of information between various data bases that have common information fields. This increases the flexibility of the data base and in some cases can be used to overcome problems associated with the poor original design of a data base.

Edit and report formatting capability - The ability to create custom reports and data entry forms varies greatly. The ease of entering and editing data varies substantially between data base software. It may be easiest to work with a data base format with editing features that parallel your word processor.

Ability to handle text - Many data base programs are designed primarily to handle numbers and addresses. Be sure the data base software you select can handle the length of text that you need (perhaps a minimum of 256 characters per field).

Use of FORTRAN or BASIC programs - A few data base formats allow one to utilize programming languages to append custom features to the data base. This may be useful to those with substantial computer experience.

SUMMARY

Microcomputers can provide substantial assistance to regulatory compliance tasks if approached realistically. First, outline your requirements. Then review the limitations of your hardware and software. Finally, do a trial run. Load part of the data into files and see if the program will do what you want it to do. Never try to accomplish something on the computer for which you cannot visualize the steps that would be required to carry it out manually.

