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Chesapeake Bay Baseline Data Acquisition: Final Report

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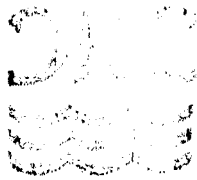


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CHESAPEAKE BAY BASELINE DATA ACQUISITION

FINAL REPORT

Contract No. 68-01-3994

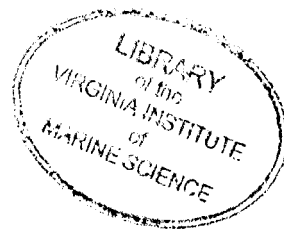
between

U.S. Environmental Protection Agency

and

Chesapeake Research Consortium, Incorporated

October 1978



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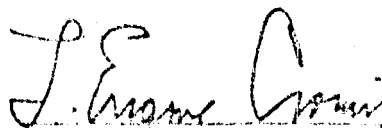
FINAL REPORT

The Chesapeake Research Consortium has completed the following reports and transmitted at least 25 copies of each to the Project Officer:

- Appendix I. A Chesapeake Bay Directory, 123 pages
- Appendix II. Submerged Aquatic Vegetation, 332 pages
- Appendix III. Toxics in the Chesapeake Bay, 275 pages
- Appendix IV. Eutrophication, 363 pages
- Appendix V. Shellfish Bed Closures, 136 pages
- Appendix VI. Dredging and Spoil Disposal, 121 pages
- Appendix VII. Modification of Fisheries, 287 pages
- Appendix VIII. Hydrologic Modifications, 191 pages
- Appendix IX. Wetlands Alteration, 239 pages
- Appendix X. Effects of Boating and Shipping on Water Quality, 160 pages
- Appendix XI. Shoreline Erosion, 344 pages

Appendices II through XI each contains a listing of relevant scientists, data sources with their characteristics and information on monitoring programs related to the topic. The specific content of Appendices varies somewhat in accordance with instructions from the Project Officer.

Tasks 1, 2, 3, and 4 have been completed in accordance with agreements with the Project Officer, Task 5 has presented some difficulty, as noted in correspondence with the Project Officer, and Attachment A is herewith provided to achieve the required compliance.



L. Eugene Cronin, Director
Chesapeake Research Consortium

Utilization of STORET as the Repository for Data Generated by EPA's Chesapeake Bay Program

EPA's computerized water quality data base STORET has been suggested as the principal data repository for data generated by the EPA Chesapeake Bay Study. It has also been suggested that early accession of this data into the STORET system will allow individual investigators to use the analytic and report preparation modules incorporated into STORET in their evaluation and presentation of information.

As part of the Baseline Data Acquisition project, we have considered some of the ramifications of using STORET as the principal repository for the Chesapeake Bay Data.

STORET since its initial implementation in 1964 has grown tremendously. It is presently the single largest data resource of water quality information. STORET is actually a series of files and associated software to input, retrieve and analyze the data.

The largest file in STORET is the Water Quality File (WQF). This file contains information on some 200,000 stations (sampling locations). The information available includes station location and parameter information. There are approximately 1800 parameters defined within STORET, but about 80% of the information relates to 200 of the most common water quality parameters. At present there are more than 40 million observations in the WQF with each observation representing a measurement of a single parameter at a specific location, station or time. Other files within STORET consist of:

The Municipal Waste Inventory File

This file includes such information as plant description, population served, volume discharged, receiving water and plant design criteria. It is periodically updated by the municipalities.

The Fish Kill File

This file, dating back to 1960, contains descriptions of pollution-related fish kills provided by state personnel responsible for investigating fish kills.

The Contract Awards File

This file contains information on construction awards for sewage facilities construction dating back to 1952.

Discussions have been held with personnel from STORET, investigators on EPA Chesapeake Bay grants and contracts and state personnel responsible for interacting with STORET.

Because of the timing of the EPA awards and initiation of coordination activities by EPA, it was not possible to analyze each of the awards to determine the suitability of STORET as the final depository for each piece of data. The following comments are general comments but should serve to focus on some of the problems faced in this program.

The major impediment to full utilization of STORET for Chesapeake Bay Data is the lack of an existing mechanism for input of biological taxonomic information. BIOSTORET is not yet available. Much of the Chesapeake Bay biological data, particularly that dealing with benthic animals will be entered into computer compatible images utilizing the presently available taxonomic code maintained by the Environmental Data Service, NOAA, Department of Commerce.

We would suggest that those persons responsible for developing BIOSTORET effect an early liaison with EDS personnel so that mechanisms for machine translation of this data can be developed. There are no funds available in individual contracts to provide this translation.

With regard to the type of data compatible with STORET, a decision must be made with regard to including that data which is not compatible with the station designation concept presently used in the WQF. Much of the present data collection is being done to answer scientific questions.

The data for a given project are often gathered at a number of locations, not necessarily the same through time. This presents the problem of identifying a large number of stations, describing these stations for WQF, and loading them in STORET when there may only be one or a few observations associated with each station.

Some of the studies, particularly in the toxics, will be developing information on a number of organics that are not presently in STORET. These unique parameters may be added. Many of the organics, however, may not be identified to specific compounds but will only be noted as a "peak number" or "unknown number," etc. This data is not compatible with STORET.

Many of the studies involve gathering of information not compatible to reduction to simple numbers -- for example, such information as photos indicating change in abundance of eelgrass. This information is not presently stored in STORET or feasible for such storage.

From these general comments it can be seen that:

1. Not all of the data which is being gathered under the Chesapeake Bay Program is compatible with STORET.
2. Some of the data is compatible but is of such a nature that it might strain the system (i.e., multiplicity of station numbers).
3. Taxonomic data presents a particular problem.

With regard to use of STORET to assist P.I.'s in report preparation and analysis, it is apparent that STORET has sophisticated and powerful software that can interact on the files. However, unless terminals, or at least access to STORET, are provided at the P.I.'s home institutions so that he or she might interact with the system, this potential cannot be realized. The use of the STORET software presupposes entry of the data into STORET files in a timely fashion.

The EPA Chesapeake Bay Program has recently indicated more clearly their intentions with respect to data storage and management. EPA's EMSL staff and the headquarters group from the Office of Monitoring and Technical Support have indicated that they will be directly involved in data scanning, evaluation and possibly storage into the EPA system.

We recommend that the EPA Chesapeake Bay Program undertake a grant-by-grant review to determine specifically which data should be entered into STORET and which data should be entered into other national or regional data repositories.

We recommend that terminals and access be provided to appropriate grantee institutions so that Principal Investigators can have full access to STORET for use and to facilitate future improvement in that and related systems.

We recommend that final decision on data storage and the requisite files and systems for the Chesapeake Bay Program incorporate full appreciation of existing sources and systems, even if this requires some delay in implementation.

We recommend that relevant portions from the Congressional directive creating the Chesapeake Bay Program be re-examined, especially "The Agency is also directed to establish a continuing capability for collecting, storing, analyzing and disseminating such data (all environmental sampling data presently being collected on the Chesapeake Bay)." Present plans for partial use of established systems of limited relevance does not appear to meet the need for a data management program for the Bay. Objective analysis of the need, evaluation of present potentials, fresh design of a fully adequate program and implementation of that program may all be necessary. Funds should be provided for all of these steps from the Chesapeake Bay Program.

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