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17 June 1983

Engineering and Design
RESERVIOR CONTAMINANTS

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1. Purpose. The purpose of this letter is to provide guidance for screening of US Army Corps of Engineers (USACE) reservoir projects to determine the presence or absence of contaminants.
2. Applicability. This ETL is applicable to all field operating activities having civil works responsibilities.
3. References:
 - a. ER 1110-2-240, Water Control Management
 - b. ER 1130-2-334, Reporting Water Quality Management Activities
 - c. ER 1130-2-415, Water Quality Data Collection, Interpretation and Application.
4. Policy. Reference 3a sets forth overall policy and procedures to carry out USACE water control management responsibilities. Reference 3b establishes water quality considerations as an integral part of water control management responsibilities and delineates requirements for monitoring and reporting of water quality activities at USACE reservoir projects. Reference 3c establishes guidelines for water quality data collection, interpretation, and application activities associated with water control management.
5. Background.
 - a. Over the past two decades, the increasing national concern with the protection and preservation of the environment, has resulted in a variety of USACE responses, among them the referenced ER's. In recent years, the USACE, along with the US Environmental Protection Agency (EPA) and the Department of Interior, has been a party in several lawsuits involving environmental effects associated with reservoir regulation. Another development has been the recognition of a variety of subtle environmental effects ranging from in situ generation of carcinogens to acid rain. In addition, the demands placed on water resources are creating an ever-increasing burden on existing reservoirs and reservoir systems. This is resulting in smaller margins for error in the management of available resources on both day-to-day and seasonal bases. In order to evaluate the magnitude of potential problems arising from reservoir contaminants, this ETL is designed to furnish more specific guidance on problems addressed in a more general fashion in the referenced ER's.

b. For the purpose of this ETL, the definition of a contaminant includes qualitative (type of material) and quantitative aspects, and may, in certain cases, be project specific.

c. A water quality constituent will be considered a contaminant if it results in any of the following:

- (1) impairs project purposes, either legislated or actual
- (2) violates state/Federal water quality standards
- (3) threatens humans, fish, or wildlife

d. There are several other guidelines necessary to keep the determination of a contaminant within reasonable limits. Unless there is definite information to the contrary on a specific project (e.g. the existence of algal toxins), the parameters considered should be limited to those on the EPA's priority pollutant list (except for the volatile organic group), EPA's Quality Criteria for Water (Red Book) and applicable state/Federal Standards. In the case of suspected carcinogenic compounds, the compound in question must be one recognized as carcinogenic by a US Government Agency. The level of concern should be at least two times the working detection limit of the standard methods used by these agencies or ten times the working detection limit if the method has been modified for type of sample (e.g. a Food and Drug Administration (FDA) method for food modified for sediments).

6. Screening Guidelines. The screening process to determine the presence or absence of the parameters of concern will, in many cases, be an iterative procedure. The key elements are: assemble existing data; make a determination, if possible; if necessary, collect more information; and if appropriate, schedule additional action. These elements and their relationships are illustrated in the flow diagram shown in Figure 1.

a. In assembling existing data, all readily accessible information should be used. These may include:

- (1) First-hand knowledge of the area by qualified personnel
- (2) Existing information such as land use, aerial photographs, previous USACE water quality studies, hydrologic and modeling studies, soils analyses, etc.
- (3) US Geological Survey Water and Sediment data
- (4) STORET Data (EPA water quality data storage and retrieval system)
- (5) EPA Reports and Studies
- (6) State, local agency, or University reports and studies

b. To determine the presence of contaminants, the data collected must be carefully evaluated. The data will not be all of the same value. In addition, items significant in one project may be insignificant in another. Therefore, it is important that the evaluation of the data be performed by an

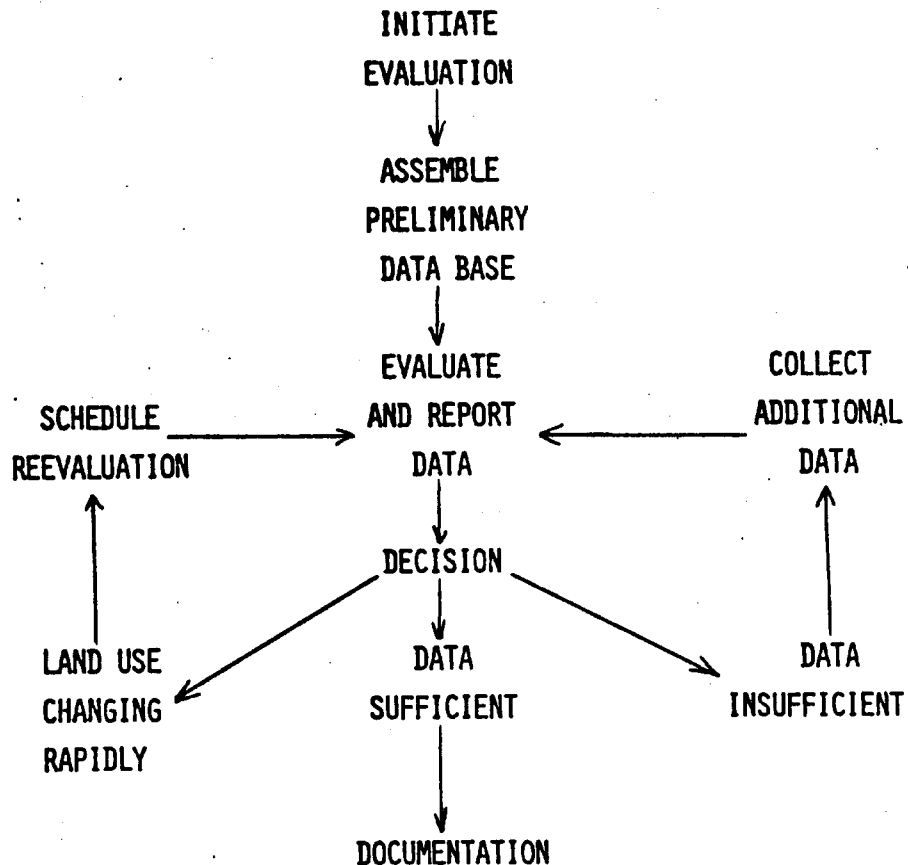


FIGURE 1

individual or team that is qualified to make the requisite judgements. Some of the considerations are: timeliness of the data, especially if changes may have occurred (e.g. changes in land use, reservoir regulation schedule, etc.); reliability of the data (e.g. the accuracy of some water quality data may be highly suspect); relative importance of the data (e.g. contaminants may be implicated by geological data but reservoir samples may indicate they are not a problem); project may be located in an area which may have an unusual problem (e.g. acid rain); and the potential for future contamination (e.g. current levels are not of concern, but continued land use changes may cause a future problem).

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c. It may be necessary in some cases to assemble more information. This additional action may take the form of obtaining more difficult to locate reports or data, or it may involve additional sample collection and analysis. A careful judgement must be made, at this point, as to the most cost effective course to follow. For example, in cases where a large amount of conflicting data are available, it may be better to collect and analyze an appropriate set of additional samples rather than search out reports that are older or more difficult to locate. It should be emphasized that all potential contaminants should be evaluated. For example, a project badly contaminated by acid mine drainage should also be evaluated for other contaminants, since different contaminants have impacts on different uses.

d. In some cases, it may be most appropriate to make a tentative judgement now and schedule a reevaluation at some definite time in the future. One obvious case for this is a project with no present problem but with ongoing rapid changes in basin land use.

7. Reporting. The results of the screening should be incorporated in the annual division Water Quality Report (reference 3b) and should indicate for each project whether or not contaminants are present, the nature and impacts of any contaminants, and planned actions. Presentation of the findings should be kept short. Divisions with a large number of projects may find a tabular presentation of results appropriate. If the results of this screening indicate specific examples of contamination, which are common to many projects, additional guidance will be issued by HQ USACE.

FOR THE COMMANDER:



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