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	EXPLAINING FLOOD RISK	
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FOREWORD

Floods are the most frequent natural disaster in the United States and cause large losses of life and property. The problem is worsening as population growth and urbanization outpace implementation of flood loss reduction measures.

A key reason for the failure to take action on flood problems often is a lack of understanding of the nature and extent of the flood risk on the part of local officials and the general public in threatened areas.

This booklet aims at improving the technical expert's skills in communicating information about flood risk to local officials and the public. It discusses the most important concepts and techniques of effective communication and points out problems that can impede understanding. It also provides suggestions for dealing with the media.

FOR THE COMMANDER:

Milton Hunter

Milton Hunter
Colonel, Corps of Engineers
Chief of Staff

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CHAPTER 1

INTRODUCTION

"If we think (the people) not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion."
Jefferson

Corps of Engineers projects for reducing flood risks usually require the endorsement of those in the area to be benefited and often their financial support. Worthwhile projects sometimes falter and die for lack of that necessary local support.

It seems that people would be interested in learning about flooding that could threaten their lives and property and that they would act promptly when a way of mitigating the threat was presented. Unfortunately, that's not the case. Presenting people with information on flood risk does not necessarily ensure their learning and learning does not necessarily lead to action to reduce the risk.

This lack of response to information on risk has been studied in recent years by psychologists and other social scientists. Some of the reasons why these kinds of communications are often ineffective are coming to light and that knowledge offers hope of improving future efforts. This booklet summarizes the most promising information including concepts of what's involved in the process of risk communication, the nature of problems that impede communications and suggestions for improving communications.

CHAPTER 2

RISK COMMUNICATION PROBLEMS

Communication about flood risk usually involves providing information concerning: a) the existence and nature of the flood threat; b) the seriousness of the risk; and c) steps that can be taken to control the flooding or mitigate its effects. Regardless of the scale of the project being considered, the purpose of the communication effort usually is to persuade people to take some recommended action. Effective communication is impeded by problems on both the source and receiver side of the information exchange.

RECEIVER PROBLEMS

Successful communication of information about flood risk requires overcoming a number of problems springing from human nature and from the views and experiences of the audience. These problems relate to people's perception of risk in general and the way in which risk-related information is viewed and evaluated.

Lack of Interest in Risk Information

People have enough problems in the day-to-day course of living. Information on a new risk represents an additional burden. Moreover, whatever action is needed to respond to the risk is likely to either cost something or require changing some present habit or practice. The natural tendency is toward rejecting the new information, rationalizing why it is not applicable, finding fault with the information or its source, or otherwise creating a way to avoid dealing with the risk. This is especially easy in the case of flooding that is often viewed as something which may or may not happen sometime in the future.

Incorrect Estimation of Risk

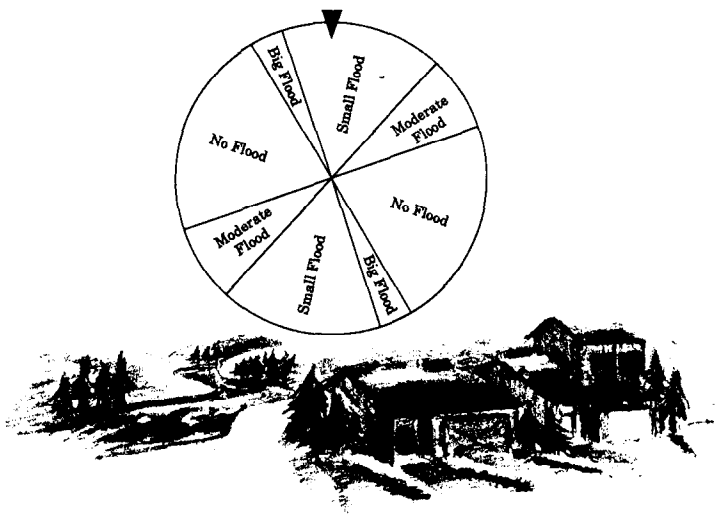
Scientifically designed studies have asked people to estimate the relative risk of various kinds of threats. The results indicate clearly that people tend to over-estimate the risk of rare events and under-estimate the risk of more common events like floods. This characteristic error in estimating risk is attributed to the fact that unusual deaths and injuries receive far more attention in the media than the more common ones. Spectacular

"...people tend to...under-estimate the risk of more common events like floods."

incidents of damage or dramatic situations are also more likely to be remembered and recalled.

Misunderstanding of Probability

Most people also share the "gambler's fallacy," believing that because some event has occurred, it is less likely to occur again soon. For example, people tend to believe after a large flood has occurred that the chance for another such flood happening in the foreseeable future is reduced when, in fact, the chances have not changed.



Lack of Experience

Most people lack significant experience with relatively rare events, such as major floods. It's difficult for a person who has seen only small floods to conceive of a great flood occurring. Closely related to this is the tendency for people to misinterpret some single experience. Someone who once experienced minor flooding on the periphery of what was described as a large flood, or even saw minor flooding in a watershed adjacent to one having what was described as a large flood may develop a wrong idea of the seriousness and destructive power of such a flood and underestimate it.

Desire for Certainty

Dealing with information on potential flooding would be troubling enough for people if the nature of the risk was easy to understand and the extent of the risk was obvious. The problem is usually compounded by uncertainty concerning whether the risk affects the individual's location, the probabilistic nature of flooding, and the incomplete protection usually recommended. Uncertainty provides a convenient rationalization for disregarding the problem.

Reluctance to Make Trade-offs

Actions reducing a hazard sometimes have their own risks. For example, building a levee to prevent

moderate levels of flooding may create some risk of a more catastrophic type of flooding if the levee fails or is overtopped. People generally have difficulty making trade-offs among these kinds of risks, especially if the risks cannot be compared in explicit terms. A similar type of problem arises if people are asked to choose between two mutually exclusive alternatives. The usual response is a wish to have the advantages of both alternatives.

"Actions reducing a hazard sometimes have their own risks"

Potential for Success

People and communities are more willing to take action in response to information on flood risk if it is believed that the recommended action will be effective. Action is less likely when the recommended measure only has some probability of reducing the risk or will only partially eliminate the risk. Related to this, individuals and small communities often feel powerless against the risk of flooding. In order to influence them, information on flood loss reduction projects must make it clear that what is required can be accomplished, preferably by showing that it has been successfully accomplished by others in their circumstances.

SOURCE PROBLEMS

There are also problems on the source side that impede the exchange of information about flood risks. These problems can frequently be solved.

Limited Understanding of Receiver Goals

Those providing information on flood risk and attempting to persuade people or communities to move forward on some project usually have a relatively narrow viewpoint. The Corps of Engineers interest is in reducing flood losses or meeting some other water-related goal. But individuals and communities normally have a wide range of interests, fears, values, priorities, and preferences that are important to their decision making and which are largely unknown to the Corps of Engineers personnel working on a project.

Individuals and communities behave in the way that best satisfies the concerns that are most important to them. For example, a decision to live in an area subject to flooding may be based on many factors such as natural amenities, travel to employment, home price, nearness to friends and family, etc. Only a portion of these factors relate to the potential for flood losses and, even if the adverse consequences of floodplain residence are appreciated, they may not be enough to tip the overall equation in favor of moving. In order to have any

 significant chance of success, informational

programs need to determine and consider as many as possible of the viewpoints and interests of the intended recipients.

Limited Authority and Resources

Even if all of the important concerns of an individual or community were known, the Corps of Engineers often lacks the authority and resources to address them in anything more than a cursory manner. As a result, project proposals often generate questions that cannot be answered easily and which tend to stymie decision making. Minimizing these kinds of problems requires anticipating the impacts of the recommended action and ensuring all of the appropriate parties are involved in the planning.

"...project proposals often generate questions that cannot be answered easily..."

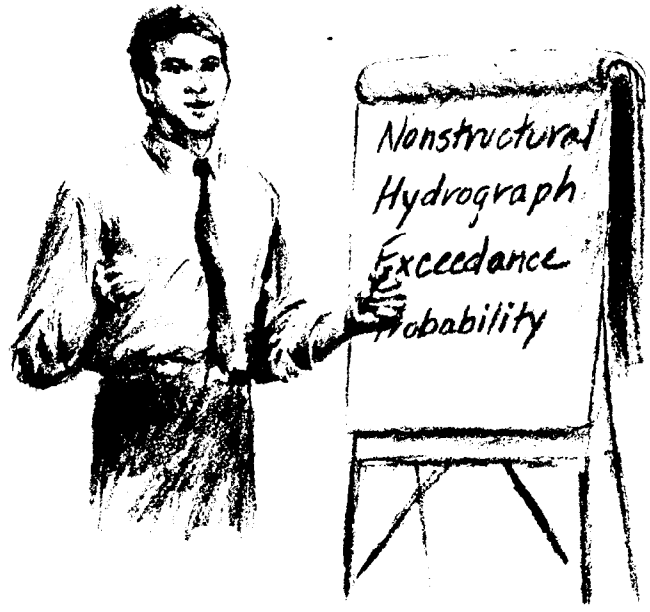
Disagreements Among Experts

People generally believe that specialists in some field have knowledge superior to their own and tend to accept their conclusions and opinions. But people also expect experts using the same information to come to more or less the same conclusions and recommendations. Disagreements among experts or agencies about the existence of a threat, its severity or the appropriate

reaction is confusing. From the perspective of the lay person, they are being asked to make a decision that can't be decided by the experts. Minimizing these kinds of problems requires ensuring that the experts are working with the same basic information and using the same assumptions.

Use of Difficult Language

Most fields make use of specialized terminology that is precise and expressive for those in the field but difficult for others to understand. The typical reaction is to ignore flood risk information presented in an overly technical or bureaucratic way.



CHAPTER 3

CONSIDERATIONS IN PLANNING RISK COMMUNICATIONS

Successfully communicating information about flood risk requires some planning. The chief matters to be considered are:

- ☐ The intended audience for the communication.
- ☐ The means of communicating information.
- ☐ How to present the information.
- ☐ Testing for effectiveness.

IDENTIFYING THE AUDIENCE

Community officials and members of the public tend to specialize in selected issues. Some may be interested and active in tax-related issues, some in historical preservation, etc. In order to attract the involvement of a significant share of a community in solving a flood problem, it may be necessary to employ multiple approaches that address the risk with respect to flooding's potential impact on several topics of interest. The same applies to providing information on a

proposed project. A presentation designed to explain a proposed project to an environmentally oriented group is not likely to answer many of the questions that would be in the minds of, for instance, those interested primarily in economic development.

MEANS OF COMMUNICATING

There are numerous channels that can be used for communicating information about flood risk. Not all of them are usually suitable for any particular informational effort but frequently several are. The following are the most familiar of the channels that are generally suitable for one or another of the types of informational programs carried out by the Corps of Engineers.

- ☐ Mass media; e.g., radio, television, and newspapers.
- ☐ Public hearings and informational meetings.
- ☐ Reports and report summaries.
- ☐ Audio-visual materials for use by others; e.g., photographs, slide sets, and audiotapes.
- ☐ Exhibits and displays, information racks, closed-circuit television showings, traveling exhibits.
- ☐ Leaflets, manuals, handbooks, reference guides, brochures, booklets and books.
- ☐ Inserts and enclosures in other forms of communication; e.g., magazines, books and utility bills.

- ☐ Participation in meetings, seminars and conferences.
- ☐ Provision of speakers for local organizations.
- ☐ Telephone answering services, i.e., recorded messages.
- ☐ Folk network ("the grapevine", the family, community leaders, community groups, religious organizations, etc.)

PRESENTING THE INFORMATION

Motivating action is an uphill battle. However, psychologists, social scientists and others have made a number of suggestions concerning how to maximize the chance of success.

> *"Motivating action is an uphill battle."*

Timing Risk Communications

People are faced with large amounts of information, a considerable amount of which is risk-related. Most information is discarded without much consideration unless the topic is of interest at the time. Research indicates, for example, that as little as five percent of direct mail materials are read. Flood-related information is most likely to be considered and acted on in the period immediately after a flood. In view of this, it may be useful in some cases to have risk communication packages stockpiled so that they can be distributed quickly after a flood.

Preferred Ways of Receiving Information

People generally state that they prefer receiving risk-related information in written form so as to be able to keep it for reference. However, within a few months of being given such information, a large percentage of people cannot recall its receipt. Research indicates that there is little actual difference in effectiveness between brochures, radio and television. When television is used, one study has found that the use of purchased time is much more effective than reliance on public service announcements.

"Risk communication should involve a two-way dialog..."

Effectiveness in Delivering Information

For maximum effectiveness, risk communications should involve a two-way dialog that enables identifying and addressing the actual concerns of the audience and ensuring the message is explained in understandable terms. Face-to-face contact appears to be the most effective technique of communicating risk information.

Length of Message

Evidence shows that people only retain a small part of lengthy messages concerning risk. It is a waste to provide more information about a flood problem or a project than the audience is interested in having.

Use of Fear as Motivator

Studies have suggested that it is not very effective to rely on fear as a motivator. While such attempts may sometimes be successful, the duration of their impact is usually short. In some cases, the use of fear may have unexpected results that are the reverse of the ones desired. It is more effective to use a positive type of motivation. Research also indicates that modest use of fear as a motivator is as effective as a high level of fear.

Comparison of Risks

It is generally not effective to compare flood risk with other types of risks. Perceptions of risks and decisions to take action to reduce a risk are affected by the characteristics of hazards such as uncertainty, controllability, catastrophic potential, and others that are not comparable between hazards.

Description of Small Probabilities

The manner of presenting flood probability data is very important. Small flood probabilities are likely to be equated with zero risk. The effectiveness of communications can be improved if the flood probability is stated in terms of a "lifetime probability" or in another aggregated form that yields a number or ratio of a magnitude that is easy to understand and appreciate. For example, flood probabilities might be stated in terms of a decade or over the life of a typical home mortgage.

Need for Evaluating Risk Communication Products

Many programs intended to inform people about floods and motivate action fail because they do not address the concerns of the intended audience or for other reasons. In order to improve their chance of success, large scale informational programs should include provisions for determining the nature and importance of such concerns and for testing whether the approaches and tools that are to be used deal effectively with them.

"Many programs fail because they do not address the concerns of the...audience."

CHAPTER 4

DEALING WITH THE MEDIA

Information about flood hazards and flood-related projects can often be done most effectively through the mass media. In some cases, such as in the event of a flood, reporters are likely to seek out sources of information about what happened and what people should do to protect themselves. In other cases, such as an effort to encourage some action, the situation might be reversed with agency staff trying to interest the media in running a story to educate people about the measure and its benefits.

Dealing with reporters often causes anxiety, particularly when the reporter has unexpectedly initiated the contact. A certain amount of dread is not unusual even in situations in which an effort is being made to obtain coverage of some issue. However, some skill in communications and an understanding of how the media approach risk-related issues helps in smoothing things out.

Whether or not working with the media is a pleasure, it is a fact of life that must be dealt with on occasion. When there's a good story, the media will cover it with or without your help and the risks of ducking the media are generally greater than cooperating with them.

News stories are a collaboration between the reporter and the sources they talk to. There's not much that can be done to change the nature of journalism or the

way reporters work. However, an improvement in coverage can often be brought about by proper performance of the source.

THE MEDIA'S INTEREST IN RISK

Reporters don't usually have any special interest in risk It's just one of several things to be covered when it becomes newsworthy. Generally, the fact that some risk exists is not particularly newsworthy. Most of us are continually at some degree of risk from one or another agent and, more often than not, from several sources simultaneously.

> *"News stories are a collaboration between the reporter and the sources..."*

This situation changes when the degree of risk poses an imminent threat. When a situation like a flood occurs, reporters suddenly take an intense interest in the risk and generally won't stop digging until some kind of sto is developed.

When dealing with issues that are not a present crisis, the reporter's job is to come up with news, not to assist in an educational effort. Reporters are not particularly interested in how to compute flood probabilities. Floo risks that do not pose an imminent hazard usually only become newsworthy when some related event

makes them so. For example, a court case on taking land for a levee might interest a reporter in doing a story on the flood problem that makes the levee necessary. Without an event, and preferably one with something to photograph, it is difficult to get coverage of a flood problem that is only a threat.

"...the reporter's job is...news, not to assist in an educational effort."

There is nothing wrong with manufacturing a newsworthy event. Displays, contests and various other techniques can often be used to attract attention to an otherwise uninteresting subject.

GENERAL CONSIDERATIONS

There are a few matters that should be observed when working with reporters, regardless of who initiated the contact:

☐ At the outset of a flood episode, reporters are primarily interested in when it will occur, its duration and magnitude, and whether people should evacuate. They are not usually interested at this point in the details about how the analysis was made, how the flood might have been prevented, or in any lengthy explanation of risk assessment. Some of those kinds of information may be of interest on the next day or the

one after that if the crisis is serious or prolonged. The interest in just bare-bones information is especially prevalent in the case of radio and television which can reach their audiences quickly with information on wha going on and what they should do. Reporters should b asked about what kinds of information are of interest and an effort made to meet that need. Long explanations of unasked for background, even if the reporter sits stil for them, are likely to be discarded.

"Stories must be simple."

Stories must be simple. Covering a topic in 40 seconds on television or in 15 short paragraphs in the paper doesn't give an opportunity to describe nuances and complexities. If the source can't simplify the

story and explain it in plain English, the reporter will try to do so, sometimes with an adverse effect on accuracy. Every effort should be made before meeting with a reporter to think over the story or position being taken, strip it down to the essentials and organize it effectively. If the use of some technical term can't be avoided, the best way to explain it should be considered.

☐ The reporter's thrust is usually to simplify a story to a dichotomy. The basic story is whether a situation is hazardous or not, not whether it's a little hazardous or greatly hazardous. If the situation can't support that kind of simplification, a source shouldn't waffle but, instead, explain to the reporter that the issue is not "risky or not" but rather "how risky".

☐ Except reporters for the largest newspapers or broadcasting stations, those covering a story are likely to have very little science background. Their goal is usually to find out enough to put together the story and move on to the next, not to learn everything that's available about an issue.

☐ Reporters usually cover two or three stories a day and have deadlines to meet. They also have to consider the amount of detail which will interest their audience and the time and space that will be given for the story. Sources should be on time for meetings, dispense with all but the barest introductory remarks and get on with the interview.

OBJECTIVITY IN THE MEDIA

Reporters are concerned about objectivity. By and large, however, they view objectivity as accurately presenting their audience with the viewpoints of those on both (or several) sides of an issue. Opposing viewpoints are usually set out in alternating paragraphs or in side by sic stories. It's not the reporter's job to evaluate the information, decide on the truth, and then write only that side of the story. Whenever dealing with the medi it should be expected that the reporter will seek out others with differing views.

THE MEDIA AND EXTREME VIEWPOINTS

Reporters deal with people having views on an issue ranging from one extreme to the other. Views at each end of the range are often not reported and those in th middle of the spectrum that have no strong opinion don't warrant much attention. Reporters tend to give most attention to positive and negative views that are strong but not extreme. Sources should tell the report which aspects of an issue are more familiar, and on which aspects the source may consequently take a stronger position.

PERSONALIZATION OF ISSUES

Stories about chronic risk tend to be uninteresting. In

 effort to make them more interesting and to get

points across more clearly, reporters often try to personalize the issue with such questions as "have you floodproofed your home" or "would you let your family live there". Sources should give some thought to the issue to be discussed and try to anticipate what sorts of personalizing questions might be asked and what answers might be given.

CHAPTER 5

DEALING WITH THE COMMUNITY

Flood risks usually affect large areas or whole groups of people and require solutions of comparable scope. Explanation of these kinds of problems and mitigating actions involve dealing with the community through meetings, workshops and other formats. Sometimes these kinds of risk communications go smoothly but often enough they either become stormy or the local government and public simply lose interest. How things progress depends in part on the nature of the interaction with the community and the public that is planned as part of the risk communication effort.

IMPORTANCE OF COMMUNITY INPUT

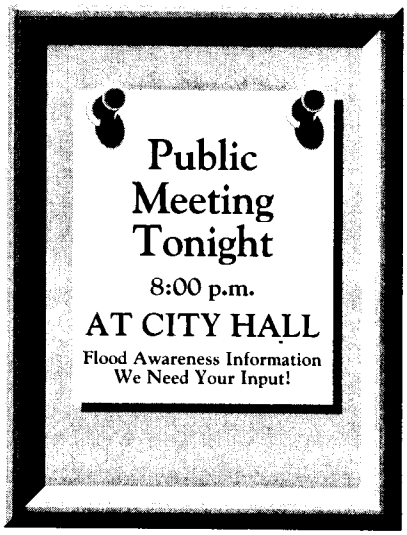
It's important to plan for community input in risk communication efforts for four major reasons:

People have a right to make decisions about issues that directly affect their lives.

Involvement in the decision making process

improves the public's understanding of the risk and leads to more appropriate response.

- ☐ Input from the public helps the information provider in identifying factors that are important beyond the bare scientific analysis of the risk and potential responses.
- ☐ A willingness to accept input increases the credibility of the information provider.



MANAGING COMMUNITY INPUT

Successful efforts to obtain community input must consist of more than presenting a plan that has already been worked out and defending against critical comments. Procedures that increase the effectiveness of communications with the community are:

- ☐ Involving the community at the earliest stage possible.

- ☐ Clarifying the use of the input and defining those things that are subject to change as a result of the input and those things that are not.
- ☐ Identifying the different audiences that exist and responding to their special needs for information.
- ☐ Wherever possible, substituting small informal meetings for large meetings or formal hearings.
- ☐ Recognizing that people's feelings are an important aspect of their response to risk and not responding to emotional statements by quoting technical data.
- ☐ Listening to expressions of values and feelings, acknowledging them, and being prepared to describe the values on which the agency's planning is based.

TRUST AND CREDIBILITY

Risk communications almost always require the lay audience to rely on the expertise of the agency providing the information, both with respect to the scientific aspects that are involved and their interpretation. The effort to explain the flood risk or project proposal are almost certain to fail unless the agency is viewed as being credible and trustworthy.

"Credibility and trust are not automatic"

Credibility and trust are not automatic. In fact, the opposite is often the case, and the agency initiating the communication effort must overcome a natural resistance to outsiders suggesting what the community should or must do.

Whether or not an agency builds trust depends on a number of factors such as: apparent competence; willingness to invite public involvement and take it seriously; openness; and consideration of community concerns. Trust and credibility can be enhanced by:

- ☐ Identifying those community organizations that do have local trust and credibility and asking for their assistance in explaining the flood risk and proposed project.
- ☐ Explaining agency procedures in the detail necessary to show their logic and describing how the public's input will fit into the procedures.
- ☐ Taking the time to consider what kinds of information different groups may want or need to know, preparing a list of issues and the responses that address them, and furnishing information at the earliest possible time even if no specific requests for it have been made.
- ☐ Only making promises that can be kept and following through on those that are made.
- ☐ If a delay occurs in meeting a commitment, getting back in contact with the person and explaining the reason for the delay.

- [ ] If pressed for a date of some event or decision that can't be controlled, explaining the process and goals rather then guessing at a date that will probably turn out to be wrong.
- [ ] Ensuring all of the appropriate coordination has been done both within the agency and with other agencies and explaining any differences in agency views and recommendations rather than letting them cause confusion.
- [ ] Making every meeting open to the public because closed meetings arouse suspicion and seldom go unnoticed.

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