

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT

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Good morning gentlemen. I would like to spend a few minutes talking about the Southern California Coastal Water Research Project, especially for the benefit of any of you who may not have heard of this organization, which is fairly new and may not be too well known among people like yourselves, but should be.

The project represents a rather unique attempt by government at the local level to tackle the problems of pollution and protection of our environment. The emphasis, of course, is on the condition of the ocean. I would like to start by describing how the project originated and what its purposes are. How I ramble from that point on depends on the looks on your faces.

First of all, as you know, there is one Federal Government, plus 50 State Governments, and about 40,000 local governments in the United States. In our individual communities, most of us are beset with a multiplicity of governments operating to regulate us, to tax us, and so on. The problems of the environment are involved in many of these different government agencies. In particular we all reside in sanitation districts, which are governmental entities responsible for collecting, processing, and disposing of domestic and industrial wastes.

In California, the coastal areas are characterized by extremely high total waste flows. In Southern California this waste flow, one billion gallons a day, requires rather large collection, treatment, and disposal systems, utilizing ocean outfalls as the ultimate disposal site for the wastewater. This is in contrast to the practice in inland areas where lakes and rivers are utilized and the ultimate disposal is in a body of water that does not have the size or assimilative capacity of the ocean. Southern California generally utilizes primary sewage treatment (first stage treatment) on its outflows as opposed to the secondary or tertiary treatment recommended where the disposal is to bodies of fresh water. In the area from Ventura to San Diego there are 5 major agencies responsible for this large flow to the ocean: the cities of San Diego and Los Angeles, the county of Ventura and the major sanitation districts of Orange and Los Angeles Counties. The five agencies took a very interesting and unique step about a year or two ago. They decided to get together and do something about the problem of ocean pollution on an area-wide scale. This was the beginning of the Southern California Coastal Water Research Project (SCCWRP), which is sponsored by these 5 agencies of local government.

The method used under state law was a joint powers agreement, which enables a group of agencies to

take some duty or function for which they have responsibility and turn it over to a new government organization. So SCCWRP is a new government agency charged with the limited responsibility of research on the effects of treated wastewaters on the ocean environment. There is concern about the effects on the ocean environment of wastewaters and there is insufficient knowledge on how to design most effectively the corresponding collection and disposal systems. There is a desire to minimize adverse effects on the environment and maximize beneficial effects. The limited experience which the agencies felt that they had in ocean ecology led them to form a project that would achieve two general objectives:

1. A more thorough understanding of the ecology of the ocean waters to help agencies that are responsible for the regulation of wastewater dischargers.
2. Evaluate criteria for ocean disposal and sewage treatment and suggest guidelines for the acceptance or rejection of contaminants as inputs to these systems.

The Regional Water Quality Control Boards, the State Water Resources Control Board, and the Federal agencies that are involved would all be affected by the second objective.

The project was formed by agencies which might be called polluters, even though their responsibility is to accept, treat, and dispose of waste of many kinds from others in some safe and hygienic fashion. To avoid results ordained beforehand, the agencies set the project up to be an *independent* agency. Five commissioners were appointed to be responsible to the public for the project. The Commissioners then turned to the task of forming a team which was as technically qualified as possible to take on this enormous task of understanding the ocean environment sufficiently well to derive better rules for the safe disposal of wastewaters.

The Commission named five eminent experts as a Consulting Board: John Isaacs, Scripps Institution of Oceanography; John Ryther, Woods Hole Oceanographic Institute; Donald Pritchard, Chesapeake Bay Institute; Erman Pearson, University of California; and Richard K. C. Lee, University of Hawaii. These men represent a technological spectrum ranging from physical and chemical oceanography and marine biology to public health and sanitary engineering. About six months after the official formation of the project, the Consulting Board and the commissioners arrived at a decision as to a project manager, who is before you today. During the other six months that have

gone by since the project was formed, I have devoted my efforts to organizing the project tasks and staffing. At the present time we have four specialists involved in the project, three of whom are here today. I would like very much for you to get to know who they are, so I am going to ask them to stand. Irwin Haydock, would you stand, please. Dr. Haydock is our biologist—he is a graduate of the University of California system and has worked in fisheries research at BCF and with the California Dept. of Fish and Game. Dr. James Jones is our physical oceanographer and a graduate of Scripps. He was with Bendix Marine Advisors and has a number of years of experience in physical oceanography. Dave Young, our chemical oceanographer, is also from Scripps. The fourth member, not present today, is Chen Young, a sanitary engineer from the University of California at Berkeley.

Well, what are we going to try to do in this project? In general, most of the items discussed at this excellent conference are of interest to us. They are all involved in one way or another with ocean pollution. One of our basic problems is to try to identify priorities. We have approximately \$1 million which has been pledged by the five sponsors. We have about two years left and want to do the best job with the first million dollars and accomplish as much of the original objectives as we possibly can. On the other hand, the early advice of the five consultants was to adopt a very fundamentally oriented approach. Thus, for example, it was not necessarily best to make extensive measurements in the general vicinity of ocean outfalls and to seek conclusions about what these might be in the future. It was pointed out that identifying the effects of wastewaters on the ocean environment was an extremely difficult task because the ocean environment is not itself well enough defined to facilitate a good assessment of manmade effects. Hence it was decided early to try for a research program that began with a study of natural processes and phenomena in the coastal waters of Southern California. We are interested in physical oceanography, marine chemistry, marine biology and the various mixing processes that occur naturally. Many technical topics having nothing to do with wastewaters have been identified as areas to study before the general effects of man on the ocean can be properly assessed. Only afterwards can one hope to establish the past and present effects of wastewaters of various types.

Frankly, we are having a very difficult time trying to decide what to do in a short period of time—the two years that we have—that will be of early benefit to the design of wastewater treatment and discharge systems and to help the regulatory agencies. The result of our struggle with these decisions should be a formal research plan to guide the program for the remainder of its term—and perhaps to serve as a model for subsequent programs.

We are also attempting to get certain kinds of research work funded as well—for example, extensions of the work of people such as Jim Galloway who spoke to you yesterday about analysis of the sediments around ocean outfalls. Typically when we find some-

one doing relevant work with, say, four or five metals, the project would propose to fund the expansion of the analysis to at least two dozen constituents. If we discover someone making an interesting study of the effects of wastewaters on the biota, we might help by enabling him to get samples from a wider geographic area, particularly the entire Southern California area, and also to get the best instrumentation and technicians in order to optimize his results. The researchers that we would be working with would publish their own findings with their own conclusions.

One of our tasks, then, is to take the work of many people, whether we have assisted them or not, and synthesize it to form a more comprehensive picture of Southern California coastal water ecology. In general, we are attempting to assess the condition of the ocean and we are immediately faced with the fact that the California Current and other ocean current flows are the sources of many of the constituents of the waters of the Southern California Bight. Thus we are also interested in, and may contribute to, certain research on the California Current or even larger systems.

I hope I have given a general idea of the functions and responsibilities of the Project. If you are interested, there are some copies available of a booklet which contains a more comprehensive description of the project. Otherwise, I would like to open the floor to questions. One of our functions is to get inputs from the general community and in particular from specialists like yourselves who are very deeply involved in the problems.

Question: Do you intend to initiate research in addition to finding people that are already working. Do you plan to sit down and find out what needs to be done?

Hlavka: Yes sir. I should have mentioned that the original plans assumed there would be a three phase program. Phase I is the assessment of the problem and the review of existing data, partly to determine what information is *not* available. Phase II is the gathering of new data. Some of the work will be initiated by the project and some of it will be a cooperative effort. Obviously the amount of work we can do with a four man professional staff is limited. We don't have laboratory facilities; hence there is a natural tendency to use the lab facilities and technical help of other programs, if possible. However, our organization is bound to grow and to some degree be more directly involved itself. Phase III is to be the analysis of the data and publishing of a final report.

Powell: I understand that you intend to coordinate published information in this field and make it available. Do you have a definite source for making this information available?

Hlavka: Yes, SCCWRP is a public agency. Information we obtain, or generate ourselves, will be available in general through our progress reports, which periodically summarize our findings. We will be happy to include concerned organizations or individuals on our progress report distribution list on request. We

may also turn out reports on our assessment phase of the project.

Powell: Do you have any headquarters or source that people could be referred to, to get information about what has been published in your area of work. It is such scattered information.

Hlavka: Our headquarters are in Los Angeles. Scattered information is one of our very serious problems. It is a costly task to ascertain with some probability that certain necessary work has not, in fact, already been accomplished to some degree.

Powell: Could you use any of the money that you have to make reports available to people that want them and can't get them from an agency that has put out a limited number of copies of progress reports that are no longer available?

Hlavka: We don't intend to operate as a reproduction agency for reports from somebody else, but to the best of my knowledge (maybe the staff would contradict this) we have had no difficulty in getting access to information. Sometimes, of course, it has to be read in a library.

Powell: Libraries do have trouble getting it, this is why I am asking.

Hlavka: In some areas we have good connections for getting information, even if it is borrowing someone's personal copy. I suppose in certain circumstances we have no objection to reproducing a few copies.

Question: It seems to me that there is an awful lot to be done from the engineering point of view in terms of dispersal mechanism—to understand it better. I have tried to find someone doing something in that area.

Hlavka: We are very interested in that area and, as an example, Jim Jones and I were just talking yesterday about the possibility of taking the drift bottle data from many years of CalCOFI cruises and analyzing it to see what it tells us about water motions in surface layers, which is one of the important phenomena involved in that mixing that you are asking about. We would like to be able to tell the ocean outfall designer what the mixing process is and what

he can count on in the way of assimilation by the ocean beyond the physical and biological—how much will it tolerate on the local level. This is one aspect of it, but the project also is concerned with the worldwide impact of pollution. James Galloway was saying yesterday that there was a certain fraction of discharged contaminants that did not show up in the sediments he has measured. Obviously they go somewhere else, and they may have a very wide distribution. So we are interested in the general oceanic changes due to pollutants as well as the local ones, but that all involves an understanding of the mixing processes within the ocean waters themselves.

Question: Do you anticipate that your agency will be funded beyond the original three year period?

Hlavka: Yes. In fact, the joint powers specified that it was anticipated that federal and other sources of funding would be sought, even during the term of the joint powers agreements, to magnify the effort that could be brought to bear. We would like very much to write a good solid proposal to the Federal Water Quality Administration, for example, but in trying to write a good document, trying to explain what the project is and what the plan is, we have to go well into this assessment phase that I spoke about earlier. Without the assessment having been completed, we cannot have good assurance that we have outlined the best research program. However, I expect that we will be making application for outside funding to at least two or more agencies including FWQA.

Question: Have you inquired through EPA whether your program might be related to theirs?

Hlavka: Oh definitely. Individuals in FWQA, which is a part of EPA—in fact *the* present EPA people in the water pollution and water quality fields, plus the State Water Resources Control Board and also the Regional Water Quality Control Boards in the Southern California area, were consulted about the formation of this project right from the beginning. They made very constructive suggestions that were incorporated in the format of the joint powers agreement and in the organization of the project itself. They are aware of SCCWRP and are getting reports of progress regularly.

Part III

SCIENTIFIC CONTRIBUTIONS
