Part 4

MANAGEMENT AND FACILITIES

Last year, we announced the reorganization of the Project's research programs and expansion of our laboratory facilities. The changes have worked out very well and continue in effect. The organization chart (Figure 1, Appendix A), showing how control of the daily work is exercised through the three main divisions (biology, chemistry, and engineering), remains essentially the same, and there have been only minor changes in personnel (Figure 2, Appendix A). Frequent staff meetings keep our scientists informed about problems and progress. Morale is high, and many pieces of research are cooperative ventures between scientists in different divisions. A spirit of comradery prevails.

Our commission membership (Figure 1, Appendix A) is unchanged, but serious illness prevented our chairman, Mr. Bert Bond, from attending several meetings; Mr. Bob Martinet, the vice-chairman, ably substituted. Staff briefings after each formal business meeting keep the commissioners up to date on our scientific progress and permit staff and commission members to speak directly to one another.

The Project's consulting board (Figure 1, Appendix A), under the chairmanship of Prof. John D. Isaacs, meets quarterly to review the work of the staff and comment on past and future work. Much of our scientific progress is a direct result of the astute suggestions of board members about specific aspects of chemistry or biology that are worth a concentrated effort. At a recent meeting, the consulting board decided to continue in the same capacity and with the same membership for a few more years. As in the past, their advisory talents will be supplemented by those of other specialists as necessary: The individuals who have advised us or collaborated with us in the past year are listed in Figure 3 of Appendix A.

The staff meets with technical representatives of the agencies sponsoring the Project on a routine basis (the first Thursday in the even numbered months). The objective of these meetings is to keep our sponsors informed of cur-rent research and plans. In turn, these technical people are able to answer staff questions about proposed changes in treatment processes, recent findings from their monitoring programs, and determinative techniques.

Several times a year, representatives of local societies interested in environmental matters are invited for an evening of discussion with our scientists. We describe our present research, answer questions, and invite suggestions for future research. The general reaction has been good, and there is appreciation that a serious effort is being made to determine precisely what is happening to the environment as a result of wastewater discharge.

We began this fiscal year by formulating a research plan and reviewing it with our consulting board. After some adjustments and careful consideration, we decided how best to spend the year's effort. Priorities were established in each scientific area, and approximate budgets were allocated. As the work progressed, some projects were dropped and modified; others that capitalize on recent findings were added.

Our official accounting of funds is kept by the County Sanitation Districts of Los Angeles County on a cash basis and audited by the Controller of Los Angeles County. In addition, our administrative officer keeps data that can be used to obtain the status of the Project on an accrual basis and to control the costs of each research task. This permits financial planning and cost allocation based on our research plan. Our financial statement is shown in Figure 1.

Scientific work such as ours must be supported by laboratories capable of doing experiments and making precise measurements. We have five in our headquarters building that have the following equipment and capabilities.

The *taxonomy laboratory* was established to properly identify and preserve reference specimens of the marine animals of southern California. We hope that eventually all marine biologists in the area will agree on species names and identifying characteristics. Therefore, we hold periodic meetings of marine biologists in this laboratory to resolve taxonomic problems.

In addition to the reference collection on the surrounding shelves, this laboratory has a reference library of taxonomic literature and two microscopes (Leitz compound 100X to 1,000X, and Aus Jena stereoscope 4X to 100X) for examining animals.

The *fish disease and toxicity* laboratory is a large aquarium room in which ocean water (hauled in from Marine-land) is used for many kinds of experiments. Four 340-liter (90-gallon) glass tanks and sixteen 150-liter (40-gallon) tanks are kept at 12°C by external cooling baths. Each aquarium has its own individual pump and filter so that natural seawater is recirculated through the filter several times a day. Two flow-through systems of five small tanks each are used for testing the toxicity of low levels of chromium on flatfish.

The *wet chemistry laboratory* is used to monitor the chemical climate in each of the tanks in the fish laboratory and to determine some of the physical/chemical properties of suspended solids and sediments.

The *trace metals laboratory* uses an atomic absorption spectrophotometer (Varian Techtron AA6) with a carbon rod atomizer. With this device, and very careful techniques, repeatable results are obtained for metals in seawater at the parts per billion level for cadmium, chromium, copper, nickel, manganese, silver, and zinc. Chromium at valence levels of three and six can be measured independently. In another type of atomic absorption machine, mercury and organic mercury are measured independently to tenths of parts per billion.

The *trace organics laboratory* was set up in February 1973 under an Environmental Protection Agency grant to make precise measurements of chlorinated pesticides and poly-chlorinated biphenyls. Concentrations of these compounds have since been measured extensively in the body parts of fish and invertebrates and in bottom sediments, river run-off collected during storms, sewage effluent, fallout, and ocean water.

One of the pedicellariae (grooming appendages) from the back of a starfish, Rathbunaster Californicus, magnified 100 times. In the Project's taxonomy lab, specimens are examined for characteristics such as this, which distinguish one species from another. This pedicellaria operates like scissors; those in other species are hinged like forceps.

The principal instrument is a gas chromatograph (the Tracer MT 220) containing dual ^{63}Ni electron-capture detectors recording on a strip chart recorder. Other laboratory equipment includes a rotary evaporator, a cell-disrupting homogenizer, an analytical balance, a freeze-dryer and a kiln for cleaning glassware.

Two laboratories at California State University, Long Beach, have been extensively used during the past year. These are the Marine Microbiology Laboratory under the direction of Prof. J. Kim and the Invertebrate Culture Laboratory directed by Professor Donald Reish. Project-sponsored research on microbes and viruses in seawater and on changes in polychaetes caused by low levels of chromium are being conducted under grant to these facilities.

Project personnel spend a great deal of time at sea taking samples of water and bottom, trawling and fishing, towing television cameras, and placing current meters and collection devices. Our marine coordinator has been very successful at obtaining the services of various small ships at modest cost. We are especially grateful to the Los Angeles City Sanitation Districts for the use of the MARINE SURVEYOR and to the Los Angeles County Sanitation District for the use of the SEA-S-DEE. A list of cruises is given in Appendix D.

The MARINE SURVEYOR, A 20-m vessel operated by Deacon Reinschmidt, Is frequently used in The Project's surveys.

The project has its own equipment for making measurements at sea such as several current meters and drogues, sediment collectors, grab devices, and corers. Special instrumentation includes television and photographic cameras, an automatic floatables sampler, and a taut-moored buoy system for trapped animal experiments.

The data processing facilities of the University of California at Los Angeles (IBM 360-91) and at San Diego (CDC 3600 and B 6700) are used to process data on benthic invertebrates, water motions, and the distribution of fish.

Figure 1. Revenues and expenditures, 1 July 1974 through 30 June 1975 (modified cash basis; May and June estimated).

Revenues		
Interest	$ 24,900	
Joint powers agreement parties	500,000	
U.S. Environmental Protection Agency	229,700	
University of California	20,000	
Other	800	
		$775,400
Expenditures and Encumbrances		
Salaries and benefits		
Salaries and wages		
Scientists and technicians	331,700	
Management and administration	95,800	
Pension	19,900	
Group insurance	12,500	
		459,900
Services and supplies		
Contracts and grants	77,200	
Materials and supplies	44,300	
Ship time	13,300	
Independent contractors	19,000	
Consulting board	13,800	
Computer services	9,300	
Publications	20,200	
Transportation and travel	17,100	
Communications	7,500	
Office rental	30,000	
Office expense	7,100	
Maintenance	13,000	
Utilities	8,700	
Equipment rental	7,500	
Legal and accounting services	14,700	
Insurance	4,400	
Miscellaneous	5,200	
		312,300
Fixed Assets		
Equipment		23,100
Total		$795,300