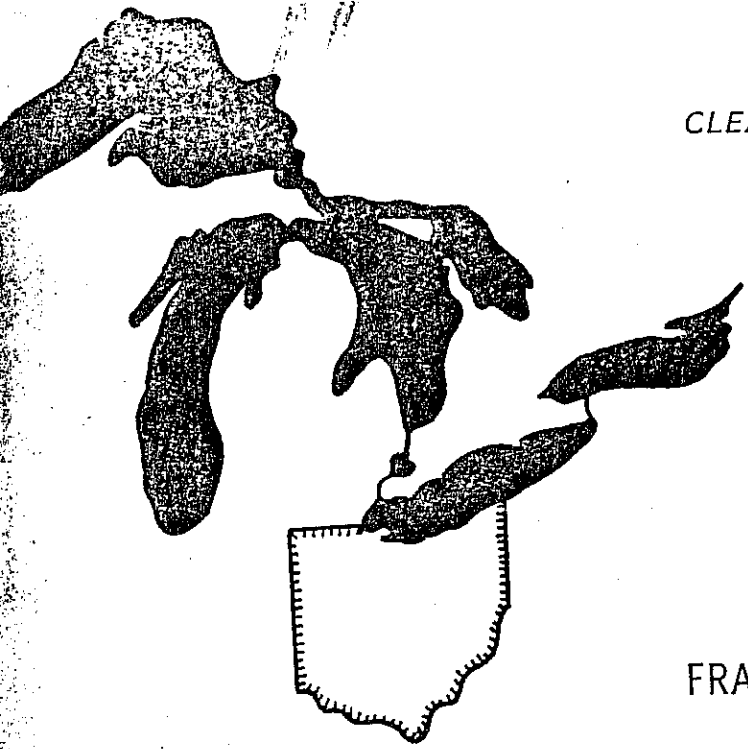

CLEAR TECHNICAL REPORT NO. 269

PROGRAM REVIEW SUMMARY
for the
FRANZ THEODORE STONE LABORATORY

Prepared by

Charles E. Herdendorf
Ronald L. Stuckey
John L. Crites

FRANZ THEODORE STONE LABORATORY
COLLEGE OF BIOLOGICAL SCIENCES
THE OHIO STATE UNIVERSITY

November 1977

THE OHIO STATE UNIVERSITY
15 November 1977

Dr. Richard H. Bohning
Dean, College of Biological Sciences
CAMPUS

Dear Dr. Bohning:

In response to your request of 24 October 1977, I am pleased to submit the enclosed Program Review Summary for the Franz Theodore Stone Laboratory. This report has been prepared after careful consideration of several items in Dr. Kuhn's letter by the Stone Laboratory Advisory Committee and the Administration Staff of the Laboratory.

Thank you for this opportunity to review the accomplishments and objectives of Stone Laboratory.

Sincerely,

Charles E. Herdendorf

Charles E. Herdendorf
Director
Franz Theodore Stone Laboratory

CEH/jaf

Enclosure

cc: Advisory Committee

The Ohio State University

Office of The Dean
College of Biological Sciences
484 West 12th Avenue
Columbus, Ohio 43210
Phone 614 422-8772

November 16, 1977

Dr. Albert J. Kuhn, Provost
Office of Academic Affairs
203 Administration Building
190 North Oval Mall
Campus

Dear Al:

In response to your communication of October 19, 1977, I asked Dr. Charles E. Herdendorf, Director of the Stone Laboratory, and the Stone Laboratory Advisory Committee to prepare a review summary for the Franz Theodore Stone Laboratory which would address the specific points outlined in your request.

I am pleased to transmit herewith the report which they have prepared. This report presents a concise summary of the present state of the property, current programs including instruction, research and public service, sources of support, future plans, justification for future use of the property, and program alternatives.

In a succinct manner, Dr. Herdendorf and the Advisory Committee have outlined the unique contribution that the Stone Laboratory facility provides to the mission of The Ohio State University. As you will note, the Franz Theodore Stone Laboratory serves not only the College of Biological Sciences, but other colleges of this University as well.

It is apparent to me that programs at the Franz Theodore Stone Laboratory have kept pace with all areas of this College in their efforts to provide a comprehensive and coordinated program in the biological sciences of the highest quality.

I invite your thoughtful consideration of the Advisory Committee's views regarding justification for retaining the property and the impact of its discontinuance.

If you need additional copies of this report, please let me know.

Today I had the opportunity to preview a twenty-eight minute color film entitled, "Challenge of Lake Erie," which has been produced by the Center for Lake Erie Area Research and the Stone Laboratory. I would like to recommend that Dr. Herdendorf

bert J. Kuhn, Provost

de you with a preview so that you can determine if this would be helpful in
nting information to the Board of Trustees relative to the Franz Theodore
Laboratory activities.

Sincerely,

ORIGINAL SIGNED BY R. H. BOHNING

Richard H. Bohning
Dean

ab

sure

. Charles E. Herdendorf
. Ronald L. Stuckey
. John L. Crites
. Richard O. Moore
. D. Lyle Goleman
. J. Bruce Griffing
. Tony J. Peterle
. Robert M. Pfister
. George S. Serif
. Thomas N. Taylor

PROGRAM REVIEW SUMMARY

FRANZ THEODORE STONE LABORATORY

Introduction

During the past five years the Franz Theodore Stone Laboratory has attempted to maintain the high standards of instruction and research which have prevailed over the 80-year history of the laboratory. The purpose of this report is to summarize the facilities, usage, sources of support, and costs during this period and to present justifications for continued use, future plans and program alternatives.

The objectives of the laboratory have been redefined in the last five years to meet the changing needs of the University and the citizens of Ohio. The key objectives (Table 1) attempt to more fully develop the potentials of the facilities and open them to new instructional, research and public service programs.

Facilities

The Franz Theodore Stone Laboratory includes 12 major buildings on South Bass and Gibraltar Islands in Ottawa County, Ohio. The present use and condition of these structures are outlined in Table 2. All of these buildings are in good condition. Specific improvements needed for each building are also listed on Table 2.

Approximately 30 boats which are used for instruction and research are docked at the Laboratory. The largest research vessel operated by the University is the 68-foot R/V Hydra. This vessel contains an analytical chemistry laboratory and accomodations for an operating and scientific crew of eight. On-board analytical equipment includes an auto-analyzer, a gas chromatograph, a spectrophotometer, a submersible pump, vacuum filtration units, and probe instrumentation for direct measurement of several physical/chemical parameters of water quality. Approximately $100,000 worth of improvement, including a new power plant and several water quality analyzers, were completed in 1976.

A second research vessel is the BioLab, a 38-foot, diesel-powered work boat used for trawling, coring, dredging, and other limnological studies. A 110 volt electrical generating system is needed for this vessel. The 32-foot, diesel powered Gibraltar II is used primarily for transporting groups of up to 25 persons and conducting research in the island area. This vessel is scheduled to have a new deck installed in November 1977.

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TABLE 1

FRANZ THEODORE STONE LABORATORY
OBJECTIVES

1. To provide the facilities and logistical support necessary for the effective presentation of courses designed to offer a blend of classroom, laboratory and field experience unavailable at an inland campus.

2. To provide the facilities and logistical support required for research projects on Lake Erie and its coastal zone.

3. To promote a balanced curriculum in the aquatic and environmental sciences which utilizes the unique setting of the laboratory.

4. To promote individual and multidisciplinary research projects which utilize the facilities and setting of the laboratory.

5. To foster close relationships between the instructional and research programs to the mutual benefit of each activity.

6. To maintain a current library on subjects related to instructional and research topics at the laboratory.

7. To collect baseline environmental data in the vicinity of the laboratory and maintain records of these observations.

8. To provide facilities for workshops, seminars and other group meetings and field trips.

9. To serve as a public information center for information relating to Lake Erie.

10. To preserve segments of the Lake Erie shoreline in a natural state for educational and research purposes.

TABLE 2

FRANZ THEODORE STONE LABORATORY
BUILDINGS ON SOUTH BASS AND GIBRALTER ISLANDS

Name	Use	Condition	Needed Improvements
South Bass Island			
Research Center	Research Laboratories	Good	Lab sinks/heating/wiring
Bayview	Library/ Faculty Offices	Good	Lighting
Lighthouse	Research Laboratories/ Faculty Residence	Excellent	Exterior painting
Peach Point Cottage	Faculty Residence	Good	Shore protection
Sycamore Cottage	Faculty Residence	Excellent	Water system
Mary Rogick Cottage	Faculty Residence	Good	Interior painting
Gibraltar Island			
F.T. Stone Laboratory	Classrooms/ Laboratories	Good	Lighting/wiring
Cooke Castle	Men's Dormitory	Good	Painting/roofing
Barney Cottage	Woman's Dormitory	Good	Painting
Gibraltar House	Married Students Dormitory	Good	Painting
Stone Cottage	Faculty Dormitory	Good	Painting
Dining Hall	Cafeteria	Good	Dishwashing machine/ drinking water supply

Description of Program

The summer teaching program is the principal instructional activity at the Franz Theodore Stone Laboratory conducted by the College of Biological Sciences. Founded at Sandusky, Ohio, in 1896, the Laboratory is the oldest freshwater field biological station in the country, and therefore has a long tradition of offering a viable teaching program. The instructional program has been designed by the College of Biological Sciences to meet the needs of graduate and advanced undergraduate biological science majors and science teachers. A student may, by an appropriate selection of courses, satisfy most of the requirements for the M.S. or Ph. D. degree in Botany or Zoology at the Laboratory.

The program stresses applied field studies in aquatic ecology and environmental biology. Courses are designed to provide students with a blend of classroom, laboratory, and field work unavailable at an inland campus. Subject matter includes a comprehensive review of the body of knowledge pertaining to freshwater systems. Classes take advantage of the unique location of this field station on Gibraltar Island in western Lake Erie. A wide variety of natural and man-induced habitats are available for investigation in the western Lake Erie area and are easily accessible from the Laboratory. Students may conduct research projects at the rocky shores of the Lake Erie islands, on the extensive spawning reefs and shoals in western Lake Erie, at the sand spits, barrier beaches and marshes along the mainland shoreline, and in the diversified tributaries and freshwater estuaries of the lake.

Most courses presently taught are based in the Departments of Botany, Zoology, Entomology, and Microbiology. The courses are designed to provide students with an interchange of classroom, laboratory, and field work. In most courses, emphasis is placed on a learning situation involving field study experiences, and many of the courses are involved with an understanding of various facets of the aquatic ecosystem. Through a combination of small size both in physical facilities and student-faculty population and through daily student-faculty interaction involving living, dining, working and socializing together, an exceptional educational atmosphere and learning experience is created. The educational opportunities at the Laboratory provide for the interaction of all elements creating an exchange of ideas that constitute a truly interdisciplinary program. The summer teaching program at the Stone Laboratory is the only program of its kind offered in the state of Ohio and it is the only field station in the nation that is devoted to the study of large lakes.

In addition to the formal course offerings, students have the opportunity to conduct individual and group research projects that focus on biological and aquatic problems that are paramount to the island setting, the shoreline and marsh habitats, or Lake Erie itself. Graduate research at the M.S. and Ph.D. levels can be completed by students at the Laboratory who are enrolled in the graduate programs of the participating departments. Interdisciplinary approaches to environmental problems are being emphasized through the interfacing of the biological sciences program with the physical, social, and engineering sciences as they have a bearing on the aquatic ecosystem. These approaches are mostly accomplished through a Guest Lecture Series and Visiting Scientists Program with specialists in fields such as geology, sedimentology, atmospheric sciences, water chemistry, nuclear engineering, historical ecology, and coastal zone planning and management.

The summer teaching program is divided into two five-week terms with different courses offered each term. Student enrollment is generally higher the first term than the second, with total enrollments usually between 60 and 75. Approximately equal numbers of advanced undergraduate and graduate students enroll in the formal courses or research programs. Students represent various disciplines and majors, such as biology, zoology, botany, microbiology, entomology, fisheries biology and management, environmental biology, aquatic biology and ecology, natural resources, wildlife management, and engineering.

The minimum requirements for a viable summer instructional program at the Franz Theodore Stone Laboratory have been considered by the Laboratory's Advisory Committee. The Committee has recommended the following requisites:

1) The program must offer 12 to 14 courses per summer quarter (6 or 7 per term) as a minimum. This number allows for maximum use of the physical facilities, to maintain desirable class size, and provide an adequate income from room and board costs to meet living expenses.

2) The formal courses offered should represent a balance from among the participating departments, with a minimum per summer of 4 (2 each term) from Botany, 1 or 2 from Entomology, 1 from Microbiology, and 8 (4 each term) from Zoology. If the departments can not supply sufficient teaching faculty from existing personnel, sufficient funding should be provided to employ faculty from outside the University who have special expertise in a particular subject matter area relative to the Program.

3) Certain basic foundation-type courses should be offered every summer in specific terms; other courses offered on a regular, but alternating year, basis. This type of arrangement will allow students and faculty advisors to provide more certain, dependable, workable programs for students. Course positions should be fixed and faculty hired to conduct the courses, rather than the reverse.

4) The program must be planned the previous year by early fall prior to the summer of offering in order that the program can be properly and widely advertised. The arrangement will allow ample time for students and faculty to make their plans. This time sequence will allow us to be competitive with other institutions who offer similar field biology instructional programs.

5) An energetic advertising program must be carried out through the use of an announcement, or other means, sent to faculty members in all college and university biological science departments in Ohio, to biological science departments throughout the country, high schools and high school biology teachers in Ohio, and others interested in the program or who will promote the program. Announcement of the summer teaching program should be available by 1 December. This time sequence will allow us to be competitive with other institutions who offer similar field biology instructional programs. Early and wide advertisement of the program would bring more applicants which will allow for a more selective group of students to be chosen to participate in the program.

In addition to the summer instructional program, several workshops and group field studies are conducted at the Laboratory in the spring and fall. Typically, 15-20 such events are scheduled each year. In two of the annual workshops, "Energy Resources" and "Oceanic Education", high school teachers may earn six hours of graduate credit. In June 1977, a public "Open House" held at the Laboratory in conjuction with the Centennial Celebration of the Village of Put-in-Bay attracted over 500 visitors.

Over the past ten years, 30 different courses in seven departments have been offered at Stone Laboratory (Table 3). The enrollment for the past four years has averaged 225 students per year in credit-earning courses (Table 3). This enrollment is comparable to an average enrollment of 215 for the five years prior to the 1973 closing of the facility. The initiation of the energy and oceanic work-

TABLE 3

FRANZ THEODORE STONE LABORATORY
ENROLLMENT STATISTICS
1968 - 1977

RSE NO.	COURSE TITLE	STUDENT ENROLLMENT 1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
TANY											
610	Field Botany	16	15	17	17	15		11	13	15	14
611	Higher Aquatic Plants		14		14			10	12	14	
621	Quantitative Plant Ecology	7	10	13	9	6		13			
632	Physiological Ecology of Aquatic Plants	7	12	8	9	10					10
644	Algae	16		15		14		11		11	
646	Diatom Ecology and Systematics								6		8
663	Aquatic Mycology		5		10				7		
DUCATION:	SCI. & MATH										
692	Energy Workshop								48	27	36
692	Oceanic Workshop								20	30	18
NTOMOLOGY											
611	Field Entomology	10	13	16	12	8			8	19	10
612	Aquatic Entomology		13		12			11		6	
MECH. ENG.											
694	Technology Impact on Aquatic Systems										8
MICROBIOLOGY											
639	Aquatic Microbiology	6		10		11		5			
662	Physiology and Ecology of Aquatic Microorganisms									5	8 10
NUCLEAR ENGINEERING											
694	Radiation Measurements										6
ZOOLOGY											
611	Animal Parasitology		14		18				9	7	12 11
612	Invertebrate Zoology	16	17	13	14	13			11	10	16 12
621	Ichthyology	18	21	17	20	19			13	13	20 10
622	Herpetology	13		9		13				11	
624	Ornithology	11	12	14	14	9			15	14	11 14
651	Field Zoology	15	15	14	19	15			16	16	22 14
652	Limnology	18	14	16	15	16			13	15	10 15
653	Fish Ecology	6	11	14	18	12					
654	Ecological Physiology of Aquatic Animals	12	12	16		15			8		
694	Environmental Measurements		6								
694	Physical Limnology						5				6
855	Environmental Radiation						4		4		
Special Problems 693	Individual Studies	12	16	15	21	11	9	12	15	17	14
Interdepartmental Seminar 891	Environmental Biology										4
Research 999	Thesis or Dissertation Research	11	4	10	12	9	12	12	14	18	17
TOTALS		194	224	217	234	205	21	174	234	274	220

shops for school teachers has helped maintain the relatively high enrollment by attracting over 50 students per year. The workshops are part of programs developed by the Colleges of Engineering and Education.

An active research program at Stone Laboratory, coordinated by the Center for Lake Erie Area Research, has provided valuable graduate training for the past five years (Table 4). Traditionally the facilities at Stone Laboratory have provided an excellent location for field oriented research on Lake Erie and adjacent areas. However, in the past five years, over $200,000 has been expended on new laboratory, computational and remote sensing equipment as well as advanced field instrumentation. These improvements have upgraded the level of research that can be conducted at the Laboratory facilities and have increased the variety of research problems that can be investigated. Since 1972, approximately 50 major projects with combined research budgets of approximately four million dollars have utilized the facilities at Stone Laboratory.

Sources of Support

The College of Biological Sciences provides an annual operating budget of approximately $18,000-$20,000 for Stone Laboratory (Table 5). In addition, an annual average income of nearly $30,000 has been generated from room and board payments and facilities rental for the past four years. Income generated in this fashion has increased several fold in the past three years (Table 6). The salaries of the instructional faculty and their housing expenses are provided directly by the departments offering courses at the Laboratory and are not included in the Laboratory's operating budget. All physical plant costs are provided by the Department of Physical Facilities.

During the period 1972-1977, over 3.5 million dollars worth of sponsored research was conducted at the facilities of the Franz Theodore Stone Laboratory. This total includes only direct support to the Ohio State University through the Research Foundation (OSURF), Ohio Agricultural Research and Development Center (OARDC), Engineering Experiment Station (EES) and Center for Lake Erie Area Research (CLEAR). These projects are listed in Table 4. It is estimated that other institutions and organizations utilizing Stone Laboratory facilities during this period conducted projects with combined budgets of approximately $500,000. Presently, at Stone Laboratory, 1.6 million dollars worth of sponsored research is under contract or grant through OSURF.

TABLE 4

SPONSORED RESEARCH PROJECTS CONDUCTED AT THE FRANZ THEODORE STONE LABORATORY 1972-1977

Project No.	Title	Budget
• F-41-R (CL 0001)	Environmental Evaluation of a Nuclear Power Plant on Lake Erie	$ 385,000
• F-48-R (CL 0002)	Impact of Parasitic Worms on Lake Erie Fishes	180,000
• RF 3504 (CL 0003)	Environmental Analysis of Paint Creek Lake	47,000
• RF 849 (CL 0004)	Wash-Out Processes in Freshwater Systems	5,000
• CL 0005	Trace Metals in Water, Sediment and Biota of Lake Erie	150,000
• CL 0006	Great Lakes Research Conference	2,000
• RF 849 (CL 0007)	Lake Erie Bibliography in Environmental Sciences	2,000
• RF 3584 (CL 0008)	Environmental Investigations of a Potential Power Plant Site on Sandusky Bay	217,000
• RF 3705 (CL 0009)	Lake Erie Nutrient Control Program: An Assessment of Eutrophication Control	588,000
• RF 3752 (CL 0010)	Pre-Operational Aquatic Ecology Monitoring: Davis-Besse Nuclear Power Station, Unit No. 1	269,000
• RF 863 (CL 0011)	Development of an Ohio Sea Grant for Lake Erie	10,000
• CL 0012	Structural Geology of the Proposed Site of the Erie Nuclear Power Plant	5,000
• RF 3959 (CL 0013)	Environmental Data Base Directory for Great Lakes from Ohio Sources	23,000

TABLE 4 (cont.)
SPONSORED RESEARCH PROJECTS CONDUCTED AT THE FRANZ THEODORE STONE LABRATORY
1972-1977

Project No.	Title	Budget
• EES 5634 (CL 0014)	Relationships of Undeveloped Land Use to Great Lakes Water Quality	$ 2,000
• EES 5636 (CL 0015)	Relationships of Dredging to Great Lakes Water Quality	4,000
• EES 5637 (CL 0016)	Relationships of Mineral Extraction to Great Lakes Water Quality	2,000
• CL 0017	Environmental Analysis of Lake Erie at Perry's Victory National Monument, Put-in-Bay, Ohio	3,000
• CL 0018	Aquatic and Terrestrial Vegetation Survey of Old Woman Creek Estuary	5,000
• CL 0019	Anti-Fouling Tests of a Water Quality Monitoring Fixture in Lake Erie	3,000
• RF 4133 (CL 0020)	Investigations of Excessive Fish Accumulations at Power Plant Intake Structures on the Maumee River	35,000
• RF 4237 (CL 0021)	Environmental Impact Assessment of Commercial Sand and Gravel Dredging in Maumee River and Bay	42,000
• CL 0022	Avian Studies in the Islands and Sandusky Bay Regions of Lake Erie	5,000
• CL 0023	Assessment of Fish Kills in the Vicinity of Lake Erie Power Plants	5,000
• CL 0024	Structural Geology of the Perry Nuclear Power Plant Site	3,000
• RF 4440 (CL 0025)	Limnological Investigations of Water Quality and Fish Larvae in Lake Erie	600,000
• CL 0026	Investigations of Parasites in Mollusks from the Lake Erie Islands	2,000

TABLE 4 (cont.)
SPONSORED RESEARCH PROJECTS CONDUCTED AT THE FRANZ THEODORE STONE LABRATORY 1972-1977

Project No,	Title	Budget
• CL 0027	Analysis of Great Lakes Plankton for Correlation with Remote Multispectral Scanner Images	$ 8,000
• CL 0028	Geological Survey of Old Woman Creek Estuary	2,000
• RF 4524 (CL 0029)	Investigations of Fish Impingement and Entrainment at the Acme and Bay Shore Plants	87,000
• RF 4599 (CL 0030)	Resources of the Lake Erie Islands	10,000
• RF 4625 (CL 0031)	Lake Erie Shore Damage Survey	124,000
• RF 4717 (CL 0032)	Lake Erie Water Quality Surveillance	211,000
• CL 0033	Analysis of Central Lake Erie Fish Larvae and Impact of Projects in NE Ohio	5,000
• RF 710608 (CL 0034)	Fish Entrainment/Impingement Analysis of Toledo Power Plants	17,000
• RF 710779 (CL 0035)	Inventory of Fish and Wildlife Resources of Great Lakes Wetlands	197,000
• RF 710xxx (CL 0036)	Operational Aquatic Ecology Monitoring: Davis-Besse Nuclear Power Station, Unit No. 1	260,000
	TOTAL	$3,515,000

TABLE 5

OPERATING BUDGET SUMMARY
1973-1977

CATEGORY	1973-74*	1974-75	1975-76	1976-77	1977-78
Specials	0	11,525	10,000	12,000	8,000
Wages	0	1,200	1,500	1,500	3,325
Operating	0	6,000	6,000	6,000	6,000
Equipment	0	1,000	1,000	1,000	1,000
TOTAL	0	19,725	18,500	20,500	18,325

* F.T. Stone Laboratory did not receive a budget allocation or offer courses in 1973-74 because of University-wide retrenchment.

TABLE 6

INCOME FOR ROOM AND BOARD AND FACILITIES RENTAL
1973-1977

Year	Income
1973-74	$10,181
1974-75	26,968
1975-76	44,975
1976-77	37,316
TOTAL	$119,440

Costs

The annual costs of operating the facility by cost center for the past five years are documented in Table 6. Room and Board associated costs range between $20,000-25,000 annually. Supplies, services and equipment replacement costs associated with facilities rental range between $5,000-$10,000 annually. Departmental expenditures for faculty salaries and housing (excluding 12-month and no-salary appointments) average approximately $25,000-30,000 annually.

Justification for Retaining Property

The continued operation of the Stone Laboratory facilities on South Bass and Gibraltar Islands will have several important benefits to The Ohio State University's teaching, research and public service programs. The outstanding justifications for retaining these facilities include:

1) Existing facilities are being used at maximum capacity for instructional and research programs.

2) Instructional programs appear to be meeting the needs of the students as demonstrated by the high success rate for advanced students seeking employment in environment-related fields.

3) Department chairmen (Botany, Entomology, Microbiology and Zoology) believe that the Laboratory is providing important training to their students not available on the Columbus campus.

4) Summer teaching program is the only one of it's kind offered in the State of Ohio and it is the oldest freshwater field station in the nation and the only one devoted to the study of large lakes.

5) An active, year-around research program has developed at these facilities which are presently operating on a 1.6 million dollar research budget.

6) The laboratory provides facilities for workshops, seminars, field trips and serves as a public information center for information relating to Lake Erie.

7) The University property on these islands preserves segments of the Lake Erie shoreline in a natural state for educational and research purposes.

Impact of Discontinuing Facility

Students at The Ohio State University, as well as others from Ohio or elsewhere, would be denied the opportunity of an instructional program in field-oriented courses in the biological sciences that have special emphasis towards the aquatic ecosystem if the Laboratory were to be closed. These students would have to seek this training at other field stations, such as those at the University of Michigan, Michigan State University, University of Minnesota, University of Montana, University of Oklahoma.

If the summer teaching program is discontinued, and students are not exposed to the biological problems associated with the Lake Erie ecosystems, then it will become very difficult to hire personnel for the Lake Erie research program. Thereby the loss of practical experience gained from working on research projects will limit the number of qualified scientists. Federal, state, and private organizations in this state will find it more difficult to hire qualified individuals in the aquatic biological sciences. Of the more than 50 graduate students who have participated in research programs at the laboratory within the past five years, all have found employment in their field of training or are now continuing their graduate education at other institutions.

The impact of discontinuing the summer instructional program at the Franz Theodore Stone Laboratory has been demonstrated by the closing of the facilities on Gibraltar Island in 1973. A University budget crisis necessitated a difficult decision by the College of Biological Sciences not to provide the nearly $50,000 required for the summer teaching program.

Following this announcement a wide interest in Stone Laboratory was expressed throughout the State and from many other parts of the country. In February 1973, President Harold L. Enarson asked Provost Albert J. Kuhn to establish a task force to study the immediate and long-range future of the Laboratory. Dr. Kuhn designated the Coordinating Committee of the Center for Lake Erie Area Research as the appropriate body to serve as the task group. Because of the interest of many other Ohio institutions in the future of Stone Laboratory and Lake Erie research, President Enarson invited representatives from 17 other universities and governmental agencies to participate in the deliberations. The 65-member Task Force submitted its recommendations to Dr. Kuhn in August 1973.

After a careful study of the unique advantages of the location of a field station on Lake Erie and the logistical problems inherent in a remote facility, the Task Force concluded the advantages and potential benefits to science and education far outweigh the disadvantages. The Task Force strongly recommended that a comprehensive Lake Erie Program be developed which incorporates the instructional capabilities which have been successfully demonstrated at the Franz Theodore Stone Laboratory and the research leadership available from the Center for Lake Erie Area Research.

The Task Force considered both immediate and long-term plans for the academic program at the Stone Laboratory. Although there are many attractive features in a consortium of Ohio colleges and universities to operate a Lake Erie field station, it is unrealistic to expect that such an arrangement would be functional in a short period of time. Therefore, the Task Force recommended that The Ohio State University continue the teaching program until such time as an inter-university organization is formed with an adequate financial base.

A curriculum was proposed which stressed the study of freshwater systems and which takes advantage of the unique locale of the field station. Long-term recommendations called for further modification and expansion of the curriculum to encompass a wide range of aquatic sciences and related subjects bearing on Lake Erie environmental problems.

The Task Force encouraged the modernization and expansion of research facilities on the Lake Erie islands and the creation of a new major mainland facility in a harbor capable of providing dockage for large research ships. Multi-disciplinary projects which provide opportunities for student research on contemporary problems were urged. The Task Force recognized the value of retaining the research facilities as an integral part of the training program.

The Laboratory is still recovering from the impact of this action. The loss of out-of-state and other Ohio institution students has not been recovered. Budgets have not been restored to their pre-1973 levels for the instructional program or for physical facilities even though the number of students and kinds of programs have increased.

Members of the Stone Laboratory Advisory Committee and the Chairmen of the departments offering courses at the Laboratory have stated that the closing of these facilities would cause adverse effects

to several departments within the College of Biological Sciences. The negative impacts would most severely effect the Department of Zoology which offers seven to ten courses at the Laboratory each summer. If the Stone Laboratory facilities were not available for research projects the Center for Lake Erie Area Research would not be able to function effectively. The closing of these facilities would require the cancellation of over one million dollars worth of sponsored research under contract to the University.

Future Plans

The existing facilities at F.T. Stone Laboratory are presently being used at their maximum capacity during summer quarter. Six to eight classrooms are available each term which is the normal offering of courses. Housing is available to approximately 60-70 students, 6-8 instructors and 5-7 researchers or visiting scientists and 4-5 staff members. This is also the typical number of individuals housed at the Laboratory each summer. Because the present program and facilities appears to be meeting the needs of the students no major changes in the summer instructional program are contemplated in the near future. The proposed curriculum for Summer Quarter 1978 is contained in Table 7.

However, the course offerings at the Laboratory do not appear to be meeting the needs of some advanced graduate students. Plans are being developed to offer specialized courses in aquatic sciences at the 800 level. These courses will attempt to meet the needs of small groups of graduate students who request advanced studies in specific areas.

The increased utilization of the Laboratory in the Fall and Spring Quarters for workshops (college credit), seminars, and field experiences by OSU and other institutions is being encouraged. Expansion into the area would further maximize the use of the existing facilities without additional costs to the University. Presently 2-3 major workshops and 10-15 class field trips are conducted at the Laboratory annually.

Increasing pressure to provide additional research space and facilities must be considered. This is an area where future planning is essential to provide researchers with adequate facilities. The sponsored research conducted annually at the Laboratory has grown from less than $100,000 in 1971 to over $1,600,000 in 1977. This growth has placed demand on the facilities that must be answered. It is anticipated that the level of sponsored research will increase greatly in the next five years and that certain modifications to the present laboratory, housing and dockage facilities must be undertaken to permit this expansion to take place. In several areas, modifications are sorely needed to meet the demand of existing projects.

TABLE 7

FRANZ THEODORE STONE LABORATORY

PROPOSED CURRICULUM

SUMMER QUARTER 1978

FIRST TERM

M,W,F	T,R,S
Community Ecology and Ecosystems (Botany 620)	Field Botany (Botany 610)
Field Entomology (Entomology 611)	Ichthyology (Zoology 621)
Field Zoology (Zoology 651)	Advanced Ornithology (Zoology 624)
Limnology (Zoology 652)	Environmental Radiation (Zoology855)

SECOND TERM

M,W,F	T,R,S
Algae (Botany 644)	Higher Aquatic Plants (Botany 611)
Aquatic Entomology (Entomology 612)	Physiology and Ecology of Aquatic Microorganisms (Microbiology 662)
Invertebrate Zoology (Zoology 612)	Animal Parasitology (Zoology 611)
Fish Ecology (Zoology 653)	Ecological Physiology of Aquatic Animals (Zoology 654)

Program Alternatives

Several program alternatives have been developed based on the concept that a program of instruction and research dealing with aquatic environments is desirable for the University. These alternatives include: 1) modify island facilities, 2) establish a mainland facility and 3) operate the program from the Columbus campus.

Modification to the facilities on the islands can be of two types; reduction or expansion of existing facilities. Because the present facilities are now being used at maximum capacity, any reduction in the facilities would reduce the size of the program. Expansion would require additional research space, a service building, heating to extend the use period of the housing and classroom buildings and dockage. The modification would permit continued growth of the research and workshop programs.

If the island facilities were to be discontinued, viable instructional and research programs could be operated from a mainland facility that was constructed on the shore with adequate docking facilities. The high costs of constructing a new facility would make this an unlikely alternative. There are very few, if any, natural areas along the shoreline that would provide the kinds of habitats found in easy access from the island facilities.

The Stone Laboratory Advisory Committee considered the possibilities of operating a Lake Erie program from the Columbus Campus. It was the consensus of the Committee that such a plan would be inoperable because of logistical problems and would not permit the high caliber of instruction and research which now prevails at Stone Laboratory.