

SIMON FRASER UNIVERSITY
Senate Committee on University Priorities
Memorandum

TO: Senate

FROM: John Waterhouse
Chair, SCUP
Vice President, Academic

RE: School of Resource and
Environmental Management
External Review

DATE: January 30, 2004

The Senate Committee on University Priorities (SCUP) has reviewed the External Review Report on the School of Resource and Environmental Management together with the response from the School and comments from the Dean of Applied Sciences.

Motion:

That Senate concurs with the recommendations from the Senate Committee on University Priorities concerning advice to the School of Resource and Environmental Management on priority items resulting from the external review as outlined in S.04-16

The report of the External Review Committee for the School of Resource and Environmental Management was submitted on April 22, 2003 following the review site visit March 19 - 21, 2003. The response of the School was received on October 1, 2003 followed by that of the Dean of Applied Sciences on November 17, 2003.

SCUP recommends to Senate that the School of Resource and Environmental Management and the Dean of Applied Sciences be advised to pursue the following as priority items:

Graduate Programs

The External Review Team raised a variety of issues and concerns in relation to the Master of Resource Management Program. These concerns were related to sessional instruction, the MRM research project, PhD requirements, and letter grades and numerical marks. The School appears to have already undertaken a thorough assessment of the issues and taken steps to implement solutions as necessary. The External Review Team's report has also raised awareness

around the issues of course load, completion times and admissions issues. The School is advised to continue to monitor any concerns as they arise and address them as needed.

Faculty

SCUP recommends that issues around the management of research centres, faculty mentorship, gender equity and student supervision should continue to be monitored and where required be addressed by the School.

Space

SCUP advises the School to continue to work with the Dean as well as the University Administration to assess space requirements for its teaching, research, student and administrative needs.

Links to Other Units Inside and Outside SFU

SCUP urges the School to work towards enhancing its interactions and ties with the internal and external community and alumni and to implement its proposed plans to create these new opportunities and directions.

Future Plans and Visions

The School is encouraged to develop research and teaching programs that are relevant to the management of cultural resources.

- c. Brian Lewis
Frank Gobas

**External Review of the
School of Resource and Environmental Management
of
Simon Fraser University
March 2003**

**Conducted by
Dr. Gordon Baskerville
Consultant in Forest Management,
Retired Head, Department of Forest Management, UBC**

**Dr. Fay Cohen
School for Resource and Environmental Studies,
Sociology and Social Anthropology,
International Development Studies,
Community Health and Epidemiology,
Dalhousie University**

**Dr. Don Mackay (Chair)
Canadian Environmental Modelling Centre
Environmental and Resource Studies, Trent University**

Executive Summary

This external review was conducted from March 19-21, 2003 in response to a request from Dr. William R. Krane, Associate Vice President, Academic. The previous review was in 1995. Extensive documentation was received by the Review Committee in advance of the visit to the Simon Fraser Campus. The Committee met with administrators, faculty, staff, students, alumni, librarians and had telephone conversations with employers. On the basis of the information provided, the Committee finds itself competent to comment on the various aspects of the School's performance as specified in the Senate Guidelines and on other specific issues raised by the University and the School. The major conclusions and comments are summarized as follows.

We find that the quality of the graduate and undergraduate teaching programs is high. Mechanisms are available to effect changes when needed and an effective evaluation system is in place. We do, however, recommend that further attention be devoted to the issue of extended completion times for the MRM degree. In particular, the course load is very heavy and the Research Project may become excessively long. This causes a delay in completion to an average of over ten semesters. This is a long residence when compared to the much shorter times at other universities. We suggest a more vigorous approach to limiting the scope of the Research Project (699) to assist in meeting a shorter completion time. The PhD program has grown significantly from 4 students in 1995 to 14 students in 2002. We note that the Graduate Studies Committee is currently considering the format of the PhD including the nature of requirements and flow of workload. We encourage this examination, since we believe that improvements are desirable. Specifically, we suggest that the average MRM completion time of 10.6 semesters be reduced to about 8 semesters and a corresponding target be set for the PhD program.

The quality of the faculty and their research output is impressive. There is effective collaboration where it is needed. Morale is very high and faculty-student-staff relationships are remarkably cordial and collegial. An excellent learning atmosphere exists. We saw no evidence of cliques or rivalries which, regrettably, are often present in the academic world.

The arrangements concerning governance are, we find, appropriate and effective. Relationships with administrators in the Faculty, the Graduate School and Research Administration are good, reflecting mutual respect and collegiality.

We were deeply impressed by the enthusiasm of the students and the collegial atmosphere which they greatly enjoy, and perhaps understandably prolong excessively. The students are a very select group; they are highly motivated and self-demanding. These characteristics enable them to survive and even enjoy the very heavy course load. The load should be such that they have time to enjoy and reflect on non-prescribed issues. We have concerns that in some cases individuals may approach the "breaking point".

There is a need to increase the staff support to the School since the present staff are over-worked and at times (such as preparing for an external review) are over-stressed. One additional person is needed. Offices could be more effectively consolidated.

The major issue threatening the quality of the program is space for graduate students, faculty (especially new faculty) and staff. The present space allocation is inadequate in total area and it is badly fragmented. This has a negative impact on the quality of several aspects of the academic environment. In the report we elaborate on this difficult issue and offer suggestions.

The present program works well, it produces high quality graduates who fill a much needed niche. It fulfills both a teaching/training function and a research function in environmental and resource issues. We do not recommend any significant changes to the structure or to the size of the faculty or student number. Growth of the order of 10% but no more than 20% in the next seven years is, in our view, appropriate. The School has achieved a critical mass. It would suffer if numbers were reduced. It could suffer if numbers were greatly expanded since interdisciplinary cooperation would likely deteriorate. In total, we find that the University has an excellent School of Resource and Environmental Management; among the best in Canada.

Quality, conduct and content of teaching programs

The course requirements of the School are exceptionally heavy but they are tolerable and we found reluctance from both the students and faculty to reduce the load. In large measure this is a reflection of the high quality and motivation of the students who are a select group with a high GPA. The acceptance rate is about one from every eight applicants. This rate is a reflection of the high perceived quality of the program by applicants.

There was universal and consistent evidence that the teaching programs are high in quality and that the graduates are well equipped to enter responsible positions in resource and environmental management. The students expressed satisfaction and even enthusiasm for the core and elective graduate courses. It was noted that the demands made of the students in individual courses and collectively in terms of number of courses required are exceptional and may represent one of the most intensive series of graduate courses in this subject area in Canada. Despite this heavy load, the students were appreciative of the breadth, content and conduct of the courses, although it was clear that in some cases the load became very stressful. The format of three courses per semester is, we believe, a tolerable load, but we urge a degree of flexibility for certain students who, given their backgrounds, may require extra assistance as a result of the broad multi-disciplinary nature of the demands. The course evaluation process was regarded as effective and responsive.

Concern was expressed by the students, in some cases quite vociferously, on the quality of some courses which were taught on a sessional basis. From time to time all Universities experience difficulties finding qualified faculty to deliver all the required courses. Rather than find less-than-satisfactory replacements, consideration should be given to postponing the course for a year until fully qualified faculty are available.

A concern is the average, median and range of completion times for the Masters Program. An average of 10.6 semesters (as quoted in the "Graduate Studies Fact Book") seems excessive. Current completion times may be shorter and we appreciate that some students take up employment before completion. The literature provided to prospective students conveys an

impression that the program is expected to take two years and in some cases somewhat longer. In reality, the average completion time is over three years. This mis-statement should be corrected and more accurate information should be provided in the brochure and on the REM website. Surprisingly the students did not complain about this situation and it is clear that this long duration is not atypical in the University. In our view there is a strong case for reducing the average MRM student residence time to about eight semesters and including an informal review of those students who show signs of requiring more than nine semesters.

There was considerable discussion about Course 699 which is a rather open-ended research project that can result in a long completion time and often culminates in a lengthy document comparable to a research thesis. The students expressed enthusiasm for this course and freely admitted that they were usually responsible for the excessive time and effort involved. We recommend a more formal procedure at project initiation to define its scope, schedule and effort. Provision of model projects may help. This should have the effect of reducing cases of excessive effort and shorten the duration of both the project and the overall Masters program.

Some concerns were expressed about the Ph.D. program, which is relatively new and fills an important need for interdisciplinary Ph.D. programs in the environmental field in Canada. Particular items currently being discussed include the structure of the program (including the breadth and depth of examinations) and the need to further promote a "cohort" among Ph.D. students. Two comments made in the previous review have been addressed: there has been a positive record of employment of graduates and a faculty member with experience in law has been added. Also, current Ph.D. students and Ph.D. graduates who participated in our review sessions were very enthusiastic about the program. Rather than make any specific recommendations during this time of early evolution, we believe that additional examination would be more useful several years from now.

We do note, however, that PhD graduates who seek an academic or research career need to demonstrate the ability to undertake and publish independent research of both quality and

quantity. We are concerned that REM graduates may be at a disadvantage compared to graduates of other institutions in which the PhD student is expected to devote most effort to research, the resulting presentations and refereed journal publications. We recommend that the committee pay particular attention to the time frame and various steps in completing the PhD program in order to promote optimal time for research and publication during the program.

We note that although the School is very successful in attracting high quality students there is an expectation that there will be increased competition from other universities which can offer shorter programs and better financial support. This changing situation merits close monitoring.

The School is involved in the Undergraduate program by teaching six courses. We are persuaded that this effort is justified on the basis that it provides visibility to the School among undergraduates, it provides opportunities for teaching assistantships and most importantly it exposes undergraduates to faculty of high quality and reputation in the resource and environmental fields. There is, we believe, no case for either increasing or reducing this effort. It has achieved a satisfactory balance. We were not able to comment on evaluations of these courses by undergraduate students.

The Cooperative program appears to be well conceived and operated. Numbers are limited by student demand. It is valuable as a means of exposing students to "real world" issues.

To our surprise, we found that at present the University and the School appear to have no standardized system for the correspondence between numerical marks and letter grades. With care not to infringe on academic freedom, it would be beneficial to both faculty and students for a clearer system to be agreed-upon and used consistently within REM. This is especially important when SFU grades are assessed by other institutions and funding agencies such as the Granting Councils and graduates find themselves in competition with others.

Quality of the faculty

The quality of the faculty and their research programs is clearly high. Morale is excellent and there is a good level of cooperation, especially in the form of groups or "Centres" which focus on specific areas such as fisheries, tourism and energy studies. In our experience, on other campuses the merits of interdisciplinary collaborations are often more perceived than real and in many cases there is no compelling incentive for collaboration given the depth of individual disciplinary activities. The level of collaboration at the School is good and leaves little opportunity for increase.

At some universities there can be a proliferation of Centres that are created in response to funding opportunities and individual enthusiasms and that do not cooperate as much as is desirable. This can create a negative perception from off-campus. We wonder if SFU is vulnerable to this problem, for example in fisheries with groups in REM, the Centre in Coastal Studies and DFO groups in Marine Environment and Habitat Science which operate in conjunction with the Cooperative Resource Management Institute.

Concern was expressed by the students that their papers on topics outside their supervisor's immediate disciplinary area were not always fully appreciated by these supervisors. Given the heavy teaching and research load this is understandable and perhaps forgivable. We suggest that faculty consider inviting a second reader to review papers on topics outside their fields and then confer with this second reader as part of the evaluation process.

We noted with satisfaction that a more regular seminar program involving students, faculty, PDFs and visitors is being implemented.

The success of the faculty in raising research funds is very commendable and is among the best in the Faculty of Applied Sciences. The extensive contacts with Provincial and Federal government agencies and industry has been very beneficial in identifying and facilitating new opportunities.

The present high morale among faculty, and thus permeating the entire academic environment, is a tribute to the past and present Directors and the attitudes of the individual faculty. It is enhanced by the obvious enthusiasm and commitment of the highly talented students who serve as academic "glue" to bind the School into a cohesive group. The staff are a third and vital component who provide immediate support to this community. This academic morale and cohesion is, we were told, not always characteristic of other groups at SFU, an observation supported by our experiences in other universities.

The department appears to make new faculty welcome and feel valued, but these efforts could be improved and perhaps formalized by assigning a specific senior faculty mentor to each new member of faculty. Initiating an academic career is stressful. New faculty deserve full support.

The present staff are, we find, devoted to their work and heartily support the School. At times they become over-stressed because of the increased demands made of them. In our view, an additional member of staff is needed. Obvious sources of funding for this extra position are the Indirect Cost allocation to SFU from the federal granting agencies or from the allocation of research contract overhead. We were grateful for the provision of a full accounting of the current allocation, but we formed the impression that little of this funding may trickle down to the School.

If there is one issue which can erode this very desirable state, it is frustration and possible conflict over the physical environment, i.e. space and its allocation. We now address this issue.

Quality of the physical environment

The one issue which was repeatedly and vociferously raised was that of space. The School's activities are spread out over a number of locations on and off campus. The students often do not have even a small space that "they can call their own". As a result many work at home and are deprived of academic interactions. Unfavourable comparisons were made of student facilities at

SFU with those elsewhere. New faculty are at a particular disadvantage. Delays in finding satisfactory space, especially for laboratory work can adversely affect the establishment of research programs, cause loss of morale, render tenure less likely and even result in resignation for greener pastures elsewhere. Since SFU presumably wants to continue to attract bright young faculty, it must give high priority to resolving the issue of their space allocation. The new faculty should either receive an assured allocation of space or be told up-front that no space will be available. The hiring implications are obvious. In our view, the space allocation issue stands out as the most important issue facing the School since it has the potential in the next five years to be destructive of the existing high morale.

We are fully aware that SFU has been the victim of erratic Provincial funding, that all departments on the Burnaby Campus face similar problems, that the provision of new space is expensive and the reallocation of existing space is difficult and divisive. Apparently there is to be a new building in 2005, but there is scepticism that this will solve the problem given the Provincially directed priorities in engineering and computer science. Whereas we find no villains among the administration and academic planners, nor do we find any heroes.

In our view, there is an immediate need to undertake an academic planning exercise to develop a strategy, at least to address aspects of this problem and provide assurance that it is of concern. We are not mandated, nor have we any desire or competence to contribute to this process but we suggest the need for the following components;

- More efficient and flexible use of existing space to permit more intensive use, possibly by time-sharing.
- Conversion of some existing open corridor space into graduate student space.
- Maximum use of laboratory space in other departments and buildings on a collaborative basis.
- Creation of a single "general office" for the School which can serve as the primary contact point for students, faculty and visitors, as well as mail reception and general office equipment.

- Identification of communal areas for socializing.
- Explore possibilities to identify additional space that can be allocated to REM, either in existing facilities or new buildings.

We note the excellent facilities which have resulted from the CRC/CFI/DFO awards, and we compliment the Canada Research Chair for his willingness to share this equipment and space with others. It is an example which could be followed in the future.

We formed the opinion that the lack of space has become the major constraint on the growth of the University and it may result in missed opportunities. Because of its excellent links with its alumni as well as industrial and governmental agencies, especially in BC, the School should be in better position than most groups to raise funds and enter into new partnerships. Such initiatives could include payment for creation of new space or payment for space rental. Continuing the traditional reliance on Provincial funding of new buildings seems unlikely to alleviate the space problem. Involvement of the private sector in financing new multi-purpose user-pay space seems the most likely solution. We understand that this approach is being considered and we heartily support it. An aggressive partnership between the administration, its fund raising groups, the School and other like groups could bring much needed new space. This does involve a change in mind set of all concerned and we are under no illusions that it will be easy.

As a matter of interest, on completion of the site visit on the Friday evening we felt deep sympathy for all concerned with the severe and widespread space situation on the campus. This sympathy was diminished, however, on the Saturday when, while writing the first draft of this report, we experienced the remarkably opulent surroundings of the Harbour Centre and viewed its many endowed rooms. Clearly the University has the expertise to provide excellent facilities!

Governance

We find that the School is well administered. It has an appropriate structure with adequate representation. It was clear that the graduate studies and undergraduate studies committees were

fully aware of areas requiring attention and had thought through solutions. Relationships with the administration are good and reflect competent management by the School.

The previous review suggested having an External Advisory Committee. On balance we do not favour creating such a Committee. If it is to be done it must be done well and fully justify its existence to external members. Too often such advisory groups fail to achieve pragmatic improvements, leaving all concerned dissatisfied.

We did hear concerns about increasing levels of "administrivia". All institutions suffer from internal pressures to increase demands for data information and paperwork. We urge the administration to exercise continued vigilance to ensure that such demands are made only when really essential.

Links to other units inside and outside SFU.

Two issues of visibility arose during our visit. The School is not as visible as it might be to others on the Campus. There is a need to broadcast its success and convey the messages that the School is responsible for a considerable teaching effort, the generation of impressive funding which flows to graduate students and others on campus and the conduct of excellent research. The need to improve on-campus visibility is recognized in the goals generated recently by the School. We heartily endorse these initiatives.

Second, we believe that the reputation of SFU in the Province, in Canada and internationally is largely determined by the visibility of its graduate level research. Unfortunately, excellent undergraduate teaching is not newsworthy! Grant applications routinely require a statement of significant contributions and their impacts. A collection of such "statements of impact" could be a valuable source of publicity and generate greater visibility.

The School provided an impressive list of alumni and we discussed the School's activities with several alumni in person and by telephone. We were left with the impression that there was a

need for more exploitation of these valuable contacts. A periodic newsletter to all alumni would be a useful method of maintaining contact, interest and involvement.

Individual faculty are involved in a variety of public service functions. Such service is invaluable and should be encouraged and recognized.

Future plans and visions

REM's future plans include increased activity in the area of native studies, including pursuit of hiring a CRC Tier II Chair in Native Studies in collaboration with the Department of Archeology and a BC Leadership Chair in Native Governance. These initiatives are viewed as positive in several respects. Over the years, REM faculty, graduates, and students have worked with First Nations communities in various capacities. This background and experience, complemented by new appointments, would enable REM to be an appropriate and constructive partner with Aboriginal people and communities engaged in post-graduate training and capacity-building. Aboriginal involvement in resource management in BC specifically and Canada as a whole can be expected to gain even greater prominence in future, and thus the REM/SFU initiative should be supported.

The committee noticed that women and other employment equity groups are under-represented among the faculty cohort, with one full time, one half time and one quarter time female member of faculty among a 14.25 cohort. Increased representation would be desirable both for equity (balance) purposes and to provide diverse role models to students. We understand that some efforts have been made in recent years to improve the balance, but that these were not successful. In the absence of any imminent retirements, REM should strive to fill any vacancies caused by current faculty departures and to attract diverse PDFs to improve this situation, as well as encourage and support its existing female faculty.

The School provided us with an impressive list of goals. We support these goals but suggest that priorities be assigned to them.

Acknowledgments

Finally, we wish to thank all those from SFU who provided us with the information and assistance which made our task easier and more enjoyable. We were treated with unfailing hospitality. The students, faculty and staff of the School were very cordial and helpful. Opinions were expressed openly and frankly. In particular we thank Laurie Summers, Frank Gobas and Carl Schwarz for guiding us through the maze of procedures, practices and passageways of SFU during our visit. We thank Ness Mackay for her assistance in assembling this report. It was a rewarding experience for us and we hope that these thoughts will be of value to the School and the University.

M E M O R A N D U M
SIMON FRASER UNIVERSITY
FACULTY OF APPLIED SCIENCES

DATE: November 14, 2003
TO: Bill Krane, Associate Vice-President Academic
FROM: Brian Lewis, Dean, Faculty of Applied Sciences
RE: External Review – School of Resource and Environmental Management

The External Review Committee strongly supports the current programs and directions of the School of Resource and Environmental Management (REM). This support is based on an assessment of student satisfaction, teaching quality, research productivity, morale, governance, academic relevance, and the importance of the program to professional communities.

REM offers a high quality and well-run professional graduate program. REM has been able to attract excellent students and the Masters in Resource Management (MRM) is respected nationally. Faculty have substantial contacts in professional communities, and they provide significant training opportunities for their students.

Most of the more minor concerns listed in the report, including issues around the assignment of courses, minor curriculum revisions, faculty mentorship, and communication with external and internal communities are being addressed by REM in an appropriate and timely matter.

I support REM's new initiatives in the area of Native Studies, including a joint CRC Tier II. A Chair and a possible Institute in Aboriginal Governance are important development opportunities for the Faculty of Applied Sciences.

I agree with the Committee that the gender imbalance in the faculty cohort must be addressed, and that the disciplines covered by REM should make this achievable as vacancies occur.

Issues of course load and completion time are addressed in some detail in the report. The MRM requires a high number of courses relative to other graduate programs in FAS and across the University. The Committee notes a reluctance to change this course load—as expressed both by students and faculty members. REM argues the necessity of its approach on the basis of the depth, breadth and professional requirements needed for professional resource managers. Students, generally, do not seem to be complaining.

REM is restructuring elements of certain key courses (801 and 699) to assure early identification and development of research projects, and it is making administrative changes which can help to assure timely progress through the degree, appropriate scope and supervision.

The Committee expressed concerns that PhD students are not being afforded adequate time for research, presentation and publication activity. REM is revising course requirements and examination requirements in response to these concerns.

Other major concerns of the report revolve around graduate student support, inadequate space and support staff.

REM students are supported by RAships from their supervisors, a limited number of TAships, FAS Graduate Fellowships, FAS RAs (NSERC top-ups), and University Graduate Fellowships. Essentially, the graduate funding pool remains limited by the smaller TA budget, which is tied to the service courses REM teaches for other programs.

Support staff are critical to the efficient running of our units. I recognize that REM and other Schools in the Faculty could use additional resources. We have this year been able to use significant funds from the Indirect Costs of Research Program to fund staff in support of research activities within REM.

REM will benefit, as will most units in FAS, from the new building (TASC 1 or DTO Building). Because REM will be moving into the new space, efficiencies and designs will partly alleviate the current space crunch. A major research group will be reintegrated with the School, and I have been able to secure an additional 1,000 sq. ft. in the new Cornerstone building, increasing REM's overall allotment.

The University is putting more resources into development and fundraising. REM's success in attracting significant research funding and funding for Chairs bodes well for future initiatives targeting external sources to help meet its infrastructure needs.

The School and its faculty incur both benefits and liabilities as a result of the fact that there is no undergraduate program in REM. Recommendation 1.7 of the External Review Committee addresses this question directly. I see some irony in this recommendation: while it admits that the package of six undergraduate service courses taught by REM are "justified on the basis that it provides visibility to the School among undergraduates, it provides opportunities for teaching assistantship and most importantly it exposes undergraduates to faculty of high quality in...the resource and environmental fields," the report goes on to say, "There is, we believe, no case for either increasing or reducing this effort."

REM cannot easily participate in increasingly significant funding programs which are based on servicing undergraduate FTEs: DTO, base-budget funding tied to reducing faculty:FTE ratios, funding tied to attracting international undergraduate students, and one-time funding tied to reducing course turnaways, etc.

An undergraduate program in Resource and Environmental Management was approved by Senate in 1996. It may be time to revisit this situation. REM has developed an outstanding graduate program. Its continued strength and development could be enhanced by the development of a strong, foundational undergraduate program. I would work with the School and the Administration to assess the current disciplinary needs for such a program, and work to make it a reality if that case can be made.

REM's interdisciplinary and integrative approach continues to provide exception value to its students, the Canadian academic community and professional communities in resource and environmental management. The Report of the External Examiners underlines this reality.



Brian Lewis
Dean
Faculty of Applied Sciences

BL/lc

17.

cc: F. Gobas, Director, School of Resource and Environmental Management

SCUP 04 - 003

SCHOOL of RESOURCE & ENVIRONMENTAL MANAGEMENT

RESPONSE

to the

REPORT of the EXTERNAL REVIEW COMMITTEE

on

the SCHOOL of RESOURCE & ENVIRONMENTAL MANAGEMENT

Prepared by: Frank Gobas, Director

September 25, 2003

INTRODUCTION

The School of Resource and Environmental Management (REM) was visited by an External Review Committee review committee over a period of three days from March 19 to 21, 2003. The committee consisted of Dr. Don Mackay (Chair of Review Team), Dr. Fay Cohen, Dr. Gordon Baskerville, and Dr. Carl Schwarz (Internal Reviewer). During their review, the committee visited with faculty, staff, students and REM alumni, as well as with members of the senior administration of the University. The committee performed their duties in a highly professional, effective and thorough manner.

The External Review Committee produced a written report which was received by REM in April 2003. The report provides a detailed review of the School's activities and performance as well as some constructive ideas and view points. The report was widely distributed in REM, the faculty of Applied Sciences and Simon Fraser University. The findings of the report were discussed in the School's Retreat, which was held on June 10-11, 2003. The goals of the Retreat were to (i) formulate a response to all comments, criticisms and advice put forward in the external reviewers' report and (ii) to change or modify the strategic plan of REM.

As part of the Retreat, all issues and recommendations that required a response were identified. This document summarizes the response of REM to the comments and recommendations outlined in the review committee's report. Following the format chosen by the review committee we have addressed each comment in the order presented in the report. Comments made in the review committee's report are represented in quotes and italics. REM's response to those comments are presented in regular type face.

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1. Quality, conduct and content of teaching programs

1.1 Comments from External Review Committee

"The course requirements of the School are exceptionally heavy but they are tolerable and we found reluctance from both the students and faculty to reduce the load. In large measure this is a reflection of the high quality and motivation of the students who are a select group with a high GPA. The acceptance rate is about one from every eight applicants. This rate is a reflection of the high perceived quality of the program by applicants.

There was universal and consistent evidence that the teaching programs are high in quality and that the graduates are well equipped to enter responsible positions in resource and environmental management. The students expressed satisfaction and even enthusiasm for the core and elective graduate courses. It was noted that the demands made of the students in individual courses and collectively in terms of number of courses required are exceptional and may represent one of the most intensive series of graduate courses in this subject area in Canada. Despite this heavy load, the students were appreciative of the breadth, content and conduct of the courses, although it was clear that in some cases the load became very stressful. The format of three courses per semester is, we believe, a tolerable load, but we urge a degree of flexibility for certain students who, given their backgrounds, may require extra assistance as a result of the broad multi-disciplinary nature of the demands. The course evaluation process was regarded as effective and responsive."

1.1 REM Response

We are pleased to hear that the external review committee found the teaching programs to be of high quality and that REM graduates are well equipped to enter responsible positions in resource and environmental management. We are also pleased to have confirmed that that our students are generally satisfied and enthusiastic about the REM program.

We agree that the REM program is a demanding program. The program contains a total of 12 courses, an introductory field course and a 2 semester research project. The rationale for the structure of the program is based on the professional requirements of resource managers. Resource managers typically deal with a large range of issues ranging from social, scientific to economic. In our view, resource managers require a strong background in these areas. Hence the core courses emphasize economics, policy and/or planning, social science, applied ecology and geomorphology and research methods. This requires 6 courses. In addition, students require an

area of specialization in order to be recruited for positions such as fisheries managers, wildlife managers, energy planners, environmental managers etc. This requires another 6 courses where students take optional courses in the large number of courses that we have available such as Law, forest ecology, environmental toxicology, fisheries management, modeling and others. The requirement for a research project is crucial as most resource management activities involve research and students require experience in this area.

The structure of the REM program is not that different from that of some other professional programs at SFU. For example the Masters in Environmental Toxicology Program also requires 12 courses and a 1-semester research project. The Masters in Pest Management Program requires 10 courses and a thesis.

Our experience is that the great majority of students find the recommended course load feasible. This is partly the result of the fact that the REM students are a select group of students with very strong academic track records. Those students who, given their backgrounds or other circumstances require extra assistance or time to complete the courses, have the option to choose the course load that is appropriate for them. The student supervisor and supervisory committee can help with selecting an appropriate course load.

1.2 Comments from External Review Committee

"Concern was expressed by the students, in some cases quite vociferously, on the quality of some courses which were taught on a sessional basis. From time to time all Universities experience difficulties finding qualified faculty to deliver all the required courses. Rather than find less- than-satisfactory replacements, consideration should be given to postponing the course for a year until fully qualified faculty are available."

1.2 REM Response

We are aware of this situation. The concern largely relates to one particular course, i.e. REM631. Over the years, REM has been unable to recruit a regular REM faculty member to teach REM 631. REM631 has always been taught by sessional instructors, with variable outcomes. Dr. Newbury has been an excellent sessional instructor for this course, but he has been unable to

teach the course over the last few years. More recently, we have been less fortunate in finding a suitable sessional instructor.

During our recent Retreat, we have proposed that this course undergo a substantial shift in both course content, format and instruction. It will become a general course in physical processes in the environment and their manifestation in management problems. The core of geomorphology and hydrology will remain, but the scale of processes considered will be expanded to include both local ecosystem-scale and global-scale perspectives on geochemical cycling. In addition, the course will address watershed management with a focus on how physical processes are dealt with in policy and planning.

The course will have one or two REM faculty members responsible for its organization and management. We will no longer rely on sessional instructors to teach this course. The course will depend heavily on input from other REM faculty, faculty at SFU (e.g. from Earth Sciences), and REM Adjunct faculty.

Subject to workload issues, Ken Lertzman, Dr. Frank Gobas and Dr. Murray Rutherford will be taking the lead role in teaching this course.

1.3 Comments from External Review Committee

"A concern is the average, median and range of completion times for the Masters Program. An average of 10.6 semesters (as quoted in the "Graduate Studies Fact Book") seems excessive. Current completion times may be shorter and we appreciate that some students take up employment before completion. The literature provided to prospective students conveys an impression that the program is expected to take two years and in some cases somewhat longer. In reality, the average completion time is over three years. This mis-statement should be corrected and more accurate information should be provided in the brochure and on the REM website. Surprisingly the students did not complain about this situation and it is clear that this long duration is not atypical in the University. In our view there is a strong case for reducing the average MRM student residence time to about eight semesters and including an informal review of those students who show signs of requiring more than nine semesters."

1.3 REM Response

The average completion time of REM Master students from 1996-2002 (involving 132 students) is 9.6 semesters. This completion time is less than the SFU average for master students of 10.6 semester. However, it is longer than the minimum residence time of 6 semesters.

The REM program is structured such that all students can complete their degree requirements within 6 semesters. All students are highly recommended to take 4 required courses in their first semester. This provides the students with all pre-requisites to enter all optional courses offered later in the program. In subsequent semesters, students get more freedom in course selection but are still recommended to take 3 courses in each of the study semesters. All major courses are offered every year with only some specialty courses being offered every other year. This means that students have the access to the courses that allows them to complete the program within 6 semesters if they wish. From 1996-2002, 7 students completed the REM program in 6 semesters or less.

There are a number of reasons why the completion times of students are longer than the minimum of 6 semesters. They are:

1. Students have access to the optional REM Co-Op program. For many years, the REM Co-Op program was the largest graduate Co-Op program at SFU. Many students have accessed this program. A typical Co-Op position involves 1 or 2 semesters, and in rare cases 3 semesters. This has caused completion times of students to increase as students can only be enrolled in the Co-Op program as long as they are registered at SFU. Clearly the students are benefiting from this optional program and choose to enroll in the program knowing that it will lead to longer completion times.
2. Students take up professional opportunities throughout their program. The Cooperative Resource Management Institute in REM as well as relationships between REM faculty and resource management organizations help to foster relationships between students and employers. Students highly value opportunities to gain work experience which in some cases has led to

future job opportunities. Clearly this is also to the benefit of the student but lengthens completion times.

3. Certain students take up ambitious research projects because of their interest in the topic area and because of the better opportunities for employment afterwards. In these cases students knowingly and voluntarily take up research projects that exceed 2 semesters. In many cases the extra work is rewarded in terms of publications that are important for pursuing a Ph.D. program. A number of REM students have pursued a Ph.D. program after graduating from the REM program.
4. Students are involved in extracurricular activities that interfere with completing the program within the minimum of 6 semesters. Also, certain students have young families and choose to adopt their curriculum to satisfy other demands on their time.

When considering the completion times of REM students, it is important to keep in mind that REM faculty do not have ultimate control over student completion times. Students are free to choose their level of involvement in their programs as long as they meet university regulations. Currently, general graduate regulations allow students to complete their Master's Degree requirements in 12 semesters. In our experience, a significant fraction of our student body opts to take the maximum time to complete their degree.

It is important to note that neither students nor REM faculty believe that the long completion times are a concern. The external reviewer's report also notes this and does not provide reasons why the average completion times is of concern. Despite the lack of recognition of a problem, REM faculty are aware of the "optics" of this situation and have continued to evaluate and modify aspects of the programs to reduce completion times.

We do not believe that the literature that REM provides to prospective students with regards to completion times represents a mis-statement or is inaccurate. Our website states:

The MRM program is designed to be completed within six semesters (2 calendar years). However, many students require a seventh semester to finish writing up their research project. Those students who enter the Co-op Education option may delay their completion of the program.

However, we do agree that the language can be adapted to clarify that students often choose to delay the completion of their degree requirements beyond 6 semesters. We plan to do this immediately.

1.4 Comments from External Review Committee

"There was considerable discussion about Course 699 which is a rather open-ended research project that can result in a long completion time and often culminates in a lengthy document comparable to a research thesis. The students expressed enthusiasm for this course and freely admitted that they were usually responsible for the excessive time and effort involved. We recommend a more formal procedure at project initiation to define its scope, schedule and effort. Provision of model projects may help. This should have the effect of reducing cases of excessive effort and shorten the duration of both the project and the overall Masters program."

1.4 REM Response

During the REM Retreat, the issues of project initiation, scope, effort and time involvement were discussed at length leading to the following modifications to the program.

1. The format of course offering REM 801 (Research Methods in Resource management) was revised. The course has now been split into two halves. The first part of the course is offered in the Fall semester and the other part is offered in the Spring semester. As part of the course, students are now required to prepare their research proposal during the second part of the course. Before, the course was offered in the Fall semester. The change in timing of the course, enables first-year Master's students to gather more background information on their research interests and to formulate with their supervisor a more realistic research proposal than was the case in previous offerings of REM 801, when a research proposal was required by November. At the end of the second semester, students will now have developed their 699 research proposal.

2. To further help shorten the completion time of students by encouraging them to identify early a topic for the research project, we have agreed that students will be required to submit their research proposal for REM699 to their supervisory committee by the 30th of May (i.e. the beginning of the third semester) instead of the end of August (i.e. the end of the third semester) of a Master's student's first academic year. Specifically, by the 30th of May of that year, the supervisory committee must now sign the form that agrees to the student's proposed research program. These proposed changes are planned to be ratified at the October 2003 REM Executive meeting.
3. To not only shorten the completion time but to also help with scoping research projects to a reasonable size, we will specify on the Research Proposal form the following expectations and recommendations, which we expect all students to follow unless there are extenuating circumstances:
 - (a) The written research proposal should be based on, and refined from, the proposal developed in REM 801 in the spring semester. It should be roughly the same length (currently about 8 to 12 pages).
 - (b) The proposal should be developed in discussions with the faculty supervisor, the expected supervisory committee, and other students, especially those working in a similar research area.
 - (c) The written proposal should also include:
 - a time line of events, i.e. an expected duration of each of the main steps in carrying out the research and writing it up;
 - an outline of the main sections that are expected to be included in the final REM 699 document, including approximate page lengths for each section;
 - (d) The student must successfully complete an oral presentation of the research proposal to the supervisory committee and other interested members of the School (most likely just others working with that supervisor).
 - (e) Failure to comply with the above expectations by the deadline of the 30th of May will result in the student not being able to register in the graduate program in subsequent semesters. In that event, the student will not be able to receive SFU funding.

4. Additional actions that will be undertaken to help define the scope, schedule, and effort in a REM 699 project are:
- (a) Students will be reminded in REM801 that, as stated in the "red book", 75 pages is the recommended maximum length for REM699 research projects.
 - (b) Students will be encouraged to look at the list of "model" 699s that REM faculty have recommended as good examples of REM699 Research Projects. This list is handed out in REM 801 and is also discussed during the REM 698 field trip.
 - (c) Faculty are encouraged to continue to recommend their students that they aim to produce at least one good-quality journal paper from their 699. This is quite feasible and has often been an outcome of 699s in the past. Faculty could go further and suggest to students that they find a really good paper in the refereed literature and then try to model their own 699's structure on that paper. In other words, depending on the target journal, they might only have room for a 5-page (double spaced) Introduction that includes a literature review, and a total length of say, 50 pages, including everything. Details may differ from one discipline to the next, but the key is that the student has a clear "model" in mind of what they are to produce. Faculty must emphasize to students that some past REM 699s are not good models, for a variety of reasons, and that students should focus on the list of recommended "model" 699s.
 - (d) Current successful students and recent graduates will be encouraged to share their experiences with new students on how to efficiently scope a project and carry it through to completion. This can occur during the already on-going annual student-run "Workshop on 699s".
 - (e) All students will continue to be reminded to attend Alton Harestad's annual seminar on completing a research project.
5. All members of the supervisory committee are expected to be responsible for providing assistance to students in scoping, planning, and carrying out the research project, not just editing the final product. The full supervisory committee is required to meet simultaneously on a regular basis with the student and at least once per year to discuss progress and next

steps in the research. The use of the term "second reader" and the associated practice of this model of student supervision is discouraged and will be dropped.

6. Supervisors are encouraged to alert the supervisory committee to situations in which a student's research project has grown in importance or scope to the point where the student should be encouraged to move into the Ph.D. stream. Alternatively, some students with increasingly broad or significant projects should be encouraged to simply write up their research project report based on a subset of their work and then work as a research assistant with the faculty member after that to complete the broader project.

1.5 Comments from External Review Committee

"Some concerns were expressed about the Ph.D. program, which is relatively new and fills an important need for interdisciplinary Ph.D. programs in the environmental field in Canada. Particular items currently being discussed include the structure of the program (including the breadth and depth of examinations) and the need to further promote a "cohort" among Ph.D. students. Two comments made in the previous review have been addressed: there has been a positive record of employment of graduates and a faculty member with experience in law has been added. Also, current Ph.D. students and Ph.D. graduates who participated in our review sessions were very enthusiastic about the program. Rather than make any specific recommendations during this time of early evolution, we believe that additional examination would be more useful several years from now.

We do note, however, that Ph.D. graduates who seek an academic or research career need to demonstrate the ability to undertake and publish independent research of both quality and quantity. We are concerned that REM graduates may be at a disadvantage compared to graduates of other institutions in which the Ph.D student is expected to devote most effort to research, the resulting presentations and refereed journal publications. We recommend that the committee pay particular attention to the time frame and various steps in completing the pH program in order to promote optimal time for research and publication during the program."

1.5 REM Response

We agree that the time commitment for completing the non-research part of the Ph.D. program is too large. To address this issue REM is in the process of revamping the requirements of the REM Ph.D. Degree. A proposal for changing the Ph.D. requirements was developed during the 2003 REM Retreat and passed unanimously during the September 22, 2003 REM Executive meeting.

The revised Ph.D. requirements are as follows.

A. Completion of four required courses

REM 611

REM 621

REM 644 (or 642)

REM 802

B. Students must achieve an A- average or higher in all of these courses.

C. Instead of writing three "field statements" (requiring more than six-months of full time work), a smaller integrative paper will be written by the student to demonstrate a comprehensive understanding of the fields of (1) environmental science, (2) resource and environmental economics, and (3) environmental policy and planning in relation to the thesis research topic. This paper will be further examined by an oral exam. The integrative paper and oral exam will be conducted over the length of one semester.

D. Completion of a research thesis

Students who have already completed the REM program, or who have transferred into the Ph.D. before completing the REM degree, can receive course waivers for all required courses for the Ph.D. program which they have already taken.

All required courses and the integrative paper can now be completed in the student's first two semesters in REM. When required by the student's research schedule, a supervisor may request in writing from the GPC that the oral exam be delayed until the next fall – the beginning of the student's 4th term in the program. We believe that the new REM Ph.D. program reduces the time spent by students in the comprehensive examination process and encourages an early start of the research and involvement in research-related activities.

1.6 Comments from External Review Committee

"We note that although the School is very successful in attracting high quality students there is an expectation that there will be increased competition from other universities which can offer shorter programs and better financial support. This changing situation merits close monitoring."

1.6 REM Response

REM acknowledges the importance of monitoring these trends and keeps careful time series records on applications and the rate of acceptance of offers of admission. These trends show that REM's competitive position is improving, with applications up 22% in 2002 over 2001. REM is also extending its monitoring to include information on the reasons why students offered positions in REM chose not to come and where they ultimately went. For the incoming class, we have tabulated the reasons why students did not accept our admission offers. This information will be used to assess trends and identify strategies to continue to improve REM's attractiveness and competitive position.

We further urge that FAS and SFU keep a close eye on this situation as well and consider making available more scholarships for graduate students because access to funding remains a key criterion for students to choose their program of studies. Several institutions have made extra funds available to attract high quality graduate students. These initiatives may have an affect on the REM student body because, until now, REM has attracted the great majority of its students from this pool of high quality students.

1.7 Comments from External Review Committee

"The School is involved in the Undergraduate program by teaching six courses. We are persuaded that this effort is justified on the basis that it provides visibility to the School among undergraduates, it provides opportunities for teaching assistantships and most importantly it exposes undergraduates to faculty of high quality and reputation in the resource and environmental fields. There is, we believe, no case for either increasing or reducing this effort. It has achieved a satisfactory balance. We were not able to comment on evaluations of these courses by undergraduate students."

1.7 REM Response

It has been the position of REM until now that extra responsibilities at the undergraduate level can only be considered if additional resources are made available. REM remains committed to supporting undergraduate teaching at SFU. REM agrees that the current involvement in undergraduate teaching is appropriate for the current size of REM program.

1.8 Comments from External Review Committee

"The Cooperative program appears to be well conceived and operated. Numbers are limited by student demand. It is valuable as a means of exposing students to "real world" issues."

1.8 REM Response

We agree. To further clarify the current status of the Co-Op program, we stress that in almost all cases, REM students who want to be involved in the Co-Op program are able to do so. In general, there are more positions than students to take them. The Co-Op program serves an important role for many students in REM

1.9 Comments from External Review Committee

"To our surprise, we found that at present the University and the School appear to have no standardized system for the correspondence between numerical marks and letter grades. With care not to infringe on academic freedom, it would be beneficial to both faculty and students for a clearer system to be agreed-upon and used consistently within REM. This is especially important when SFU grades are assessed by other institutions and funding agencies such as the Granting Councils and graduates find themselves in competition with others."

1.9 REM Response

We agree. At the September 22 REM Executive meeting, we have adopted a policy on letter grades and numerical marks. This policy includes straightforward rules for translating numerical marks into letter grades.

2. Quality of the faculty

2.1 Comments from External Review Committee

"The quality of the faculty and their research programs is clearly high. Morale is excellent and there is a good level of cooperation, especially in the form of groups or "Centres" which focus on specific areas such as fisheries, tourism and energy studies. In our experience, on other campuses the merits of interdisciplinary collaborations are often more perceived than real and in many cases there is no compelling incentive for collaboration given the depth of individual disciplinary activities. The level of collaboration at the School is good and leaves little opportunity for increase."

2.1 REM Response

We are pleased with these comments.

2.2 Comments from External Review Committee

"At some universities there can be a proliferation of Centres that are created in response to funding opportunities and individual enthusiasms and that do not cooperate as much as is desirable. This can create a negative perception from off-campus. We wonder if SFU is vulnerable to this problem, for example in fisheries with groups in REM, the Centre in Coastal Studies and DFO groups in Marine Environment and Habitat Science which operate in conjunction with the Cooperative Resource Management Institute."

2.2 REM Response

So far, we are not aware of any problems that have arisen as a result of our Centers. However, we will keep an eye on this situation and continue to cooperate with other Centers.

2.3 Comments from External Review Committee

"Concern was expressed by the students that their papers on topics outside their supervisor's immediate disciplinary area were not always fully appreciated by these supervisors. Given the heavy teaching and research load this is understandable and perhaps forgivable. We suggest that faculty consider inviting a second reader to review papers on topics outside their fields and then confer with this second reader as part of the evaluation process."

2.3 REM Response

This information is new to us. We have not heard this concern before from our students. It is the current practice to invite on student supervisory committees members who have expertise that complements that of the supervisor. Currently, REM has 35 adjunct and associated faculty on staff to provide the required expertise for student supervision. In addition, REM has relied on faculty from other departments at SFU as well as faculty from other institutions (such as UBC or U of T and others) to serve on student supervisory committees. We believe that in most cases, the expertise represented on student supervisory committees is sufficient to support the students in all aspects of the research, including the evaluation of the research project papers. However, we recognize that in some cases research projects in REM involves research in such different disciplinary areas that one or several committee members may be poorly prepared to evaluate certain aspects the research. We believe that this is unavoidable and may not constitute a problem. Supervisory committee are composed with the goal to bring together people with different areas of expertise. This ensures that at least one faculty member can supervise and evaluate any given aspect of the student's research.

2.4 *Comments from External Review Committee*

"We noted with satisfaction that a more regular seminar program involving students, faculty, PDFs and visitors is being implemented."

2.4 REM Response

REM has always had a seminar series during the fall and spring semesters. This year is no exception. The frequency of the seminars has changed over the years, largely in response to student participation. The REM program is a very heavy program and we have noticed that the workload of students is often so high that participation in seminars is receiving a lower priority.

2.5 *Comments from External Review Committee*

"The success of the faculty in raising research funds is very commendable and is among the best in the Faculty of Applied Sciences. The extensive contacts with Provincial and Federal government agencies and industry has been very beneficial in identifying and facilitating new opportunities."

2.5 REM Response

We agree.

2.6 Comments from External Review Committee

"The present high morale among faculty, and thus permeating the entire academic environment, is a tribute to the past and present Directors and the attitudes of the individual faculty. It is enhanced by the obvious enthusiasm and commitment of the highly talented students who serve as academic "glue" to bind the School into a cohesive group. The staff are a third and vital component who provide immediate support to this community. This academic morale and cohesion is, we were told, not always characteristic of other groups at SFU, an observation supported by our experiences in other universities."

2.6 REM Response

We are pleased with the current situation and will attempt to maintain an environment of openness and inclusiveness that is at the heart of some of our success in this area.

2.7 Comments from External Review Committee

"The department appears to make new faculty welcome and feel valued, but these efforts could be improved and perhaps formalized by assigning a specific senior faculty mentor to each new member of faculty. Initiating an academic career is stressful. New faculty deserve full support."

2.7 REM Response

We agree. SFU has a new-faculty mentorship program. Information on this program can be found on the SFU Website although it is somewhat difficult to find as there is no reference to any form of mentorship program on the *Key Information for New Faculty* page within the VP Academic website. In the past, faculty members in REM have taken on a mentoring role for new REM faculty. This has occurred on an informal basis. There is general agreement among REM faculty that a senior REM faculty mentor should be "assigned" to new REM faculty that arrive in the future. REM believes that this "assignment" should take place on an informal basis and that a formal policy for the REM mentorship program is not required at this time.

2.8 Comments from External Review Committee

"The present staff are, we find, devoted to their work and heartily support the School. At times they become over-stressed because of the increased demands made of them. In our view, an additional member of staff is needed. Obvious sources of funding for this extra position are the Indirect Cost allocation to SFU from the federal granting agencies or from the allocation of research contract overhead. We

were grateful for the provision of a full accounting of the current allocation, but we formed the impression that little of this funding may trickle down to the School."

2.8 REM Response

We agree. Our staff is a crucial part of the REM program. We are aware that our staff members are over-stressed at times. This has resulted in an increased incidence of sickness and absenteeism. This situation requires immediate attention because of the human suffering involved and the negative impacts on the administrative functions of the School. The origin of the problem lies in the fact that REM has had the same number of continuing full-time staff since 1989. Since 1989, the number of faculty and student FTE's have more than doubled. In addition, a large number of administrative tasks have been added to the workload of the staff and increases in faculty productivity (e.g. number of research grants that require administration) has further added workload to staff. Despite this substantial growth of the REM program, the School's total administrative support staff has remained at 3 (administrative assistant, Secretary to the Directors of CTPR and REM, and a Graduate Secretary). The 1996 External Review pointed out the need for more support staff. REM did gain 0.5 technical support. This allowed us to have Laurence Lee supporting REM on a full time rather than a 0.5 time basis. However, this did not address the secretarial and administrative support needed in the School.

This external review stresses a need to increase the staff support to the School. REM supports this recommendation. REM will continue to pursue opportunities within SFU to increase its base-budget to add an additional staff member. The suggested mechanism of transferring the Indirect Costs Allowance on federal grants to REM appears to be an appropriate way to accomplish this. We hope that this can actually materialize. In the meantime, REM will make use of soft-monies (for as long as they are available) to support an additional staff member to fill the need in the department for secretarial support.

3. Quality of the physical environment

Comments from External Review Committee

"The one issue which was repeatedly and vociferously raised was that of space. The School's activities are spread out over a number of locations on and off campus. The students often do not have even a small space that "they can call their own".

As a result many work at home and are deprived of academic interactions. Unfavourable comparisons were made of student facilities at SFU with those elsewhere. New faculty are at a particular disadvantage. Delays in finding satisfactory space, especially for laboratory work can adversely affect the establishment of research programs, cause loss of morale, render tenure less likely and even result in resignation for greener pastures elsewhere. Since SFU presumably wants to continue to attract bright young faculty, it must give high priority to resolving the issue of their space allocation. The new faculty should either receive an assured allocation of space or be told up-front that no space will be available. The hiring implications are obvious. In our view, the space allocation issue stands out as the most important issue facing the School since it has the potential in the next five years to be destructive of the existing high morale.

We are fully aware that SFU has been the victim of erratic Provincial funding, that all departments on the Burnaby Campus face similar problems, that the provision of new space is expensive and the reallocation of existing space is difficult and divisive. Apparently there is to be a new building in 2005, but there is scepticism that this will solve the problem given the Provincially directed priorities in engineering and computer science. Whereas we find no villains among the administration and academic planners, nor do we find any heroes.

In our view, there is an immediate need to undertake an academic planning exercise to develop a strategy, at least to address aspects of this problem and provide assurance that it is of concern. We are not mandated, nor have we any desire or competence to contribute to this process but we suggest the need for the following components;

- More efficient and flexible use of existing space to permit more intensive use, possibly by time-sharing.*
- Conversion of some existing open corridor space into graduate student space.*
- Maximum use of laboratory space in other departments and buildings on a collaborative basis.*
- Creation of a single "general office" for the School which can serve as the primary contact point for students, faculty and visitors, as well as mail reception and general office equipment.*
- Identification of communal areas for socializing.*
- Explore possibilities to identify additional space that can be allocated to REM, either in existing facilities or new buildings.*

We note the excellent facilities which have resulted from the CRC/CFI/DFO awards, and we compliment the Canada Research Chair for his willingness to share this equipment and space with others. It is an example which could be followed in the future.

We formed the opinion that the lack of space has become the major constraint on the growth of the University and it may result in missed opportunities. Because of

its excellent links with its alumni as well as industrial and governmental agencies, especially in BC, the School should be in better position than most groups to raise funds and enter into new partnerships. Such initiatives could include payment for creation of new space or payment for space rental. Continuing the traditional reliance on Provincial funding of new buildings seems unlikely to alleviate the space problem. Involvement of the private sector in financing new multi-purpose user-pay space seems the most likely solution. We understand that this approach is being considered and we heartily support it. An aggressive partnership between the administration, its fund raising groups, the School and other like groups could bring much needed new space. This does involve a change in mind set of all concerned and we are under no illusions that it will be easy.

As a matter of interest, on completion of the site visit on the Friday evening we felt deep sympathy for all concerned with the severe and widespread space situation on the campus. This sympathy was diminished, however, on the Saturday when, while writing the first draft of this report, we experienced the remarkably opulent surroundings of the Harbour Centre and viewed its many endowed rooms. Clearly the University has the expertise to provide excellent facilities!"

REM Response

For many years, we have documented the growing need for (i) adequate space for our students and staff and (ii) appropriate facilities to support the research of our faculty members. The materials prepared for the external review include the latest report on space needs in REM. There has been some good news on this front. REM has improved its GIS and computing facilities thanks to support from CRC, CFI, DFO and contributions from the Dean of FAS. Also, REM has made renovations in the environmental toxicology lab and closed in part of the hallway to replace its seminar room which was converted into a fisheries research facility. There may also be some additional good news in the future if plans for the occupation of the TASC building will materialize. As part of the plans for the TASC building, REM will obtain a general office and a new fisheries research laboratory to be used and shared by two new faculty members (Drs. Sean Cox and Bill de la Mare) and a project room that will be shared among several faculty members in the planning area.

However, despite the most recent positive developments in addressing the space problems, a number of space needs remain unaddressed. Key space needs include study space for graduate students. Study space for graduate students has continued to decline over recent years while student enrollment has grown. The new TASC building plans does not provide new study space

for graduate students. Another priority is the consolidation of all parts of the REM program in one location on campus. The latter is of course quite important in a program focusing on integration. However, it will not be achieved in the plans for the new TASC building.

Over the years, REM has continued to bring its space needs to the attention of the SFU administration. REM will continue to do this as this is probably the only way REM can address this problem.

4. Governance

4.1 Comments from External Review Committee

"We find that the School is well administered. It has an appropriate structure with adequate representation. It was clear that the graduate studies and undergraduate studies committees were fully aware of areas requiring attention and had thought through solutions. Relationships with the administration are good and reflect competent management by the School."

4.1 REM Response

We agree.

4.2 Comments from External Review Committee

"The previous review suggested having an External Advisory Committee. On balance we do not favour creating such a Committee. If it is to be done it must be done well and fully justify its existence to external members. Too often such advisory groups fail to achieve pragmatic improvements, leaving all concerned dissatisfied."

4.2 REM Response

We agree.

4.3 Comments from External Review Committee

"We did hear concerns about increasing levels of "administrivia". All institutions suffer from internal pressures to increase demands for data information and paperwork. We urge the administration to exercise continued vigilance to ensure that such demands are made only when really essential."

4.3 REM Response

Staff, faculty and students can all attest to the ever increasing workload in support of university administration and governance (i.e. work of REM committees). This increase in workload remains essentially unrecognized and unsupported by resources. We support the recommendation to the SFU senior administration to exercise more caution in this area as extra effort in administrative efforts go at the expense of energy devoted to education and research. This especially affects relatively small departments such as REM where the extra workload can not be distributed as efficiently as in larger departments.

5. Links to other units inside and outside SFU

5.1 Comments from External Review Committee

"Two issues of visibility arose during our visit. The School is not as visible as it might be to others on the Campus. There is a need to broadcast its success and convey the messages that the School is responsible for a considerable teaching effort, the generation of impressive funding which flows to graduate students and others on campus and the conduct of excellent research. The need to improve on-campus visibility is recognized in the goals generated recently by the School. We heartily endorse these initiatives."

5.1 REM Response

REM recognizes that its visibility on campus is not as good as it could be. One the factors that may have contributed to this is that REM was a very small department for many years. Only in the last few years, it has grown substantially. Currently, REM's faculty complement is 14.25 and REM is now in a good position to increase its visibility within SFU and beyond SFU. During the REM Retreat, REM agreed to implement a number of initiatives to increase its visibility. They include:

1. The submission of a feature article on REM to the SFU News. The article should highlight the 25th anniversary of the School of Resource and Environmental Management (formerly known as the Natural Resource Management Program from 1979-1990). This article creates an opportunity to highlight the external reviewers' positive findings about REM, as well as

our track record on research and teaching, our faculty and students' influence on the practice of resource management, and the important role of our graduates in that field.

2. An update of the REM web site. This will include information about the positive comments from the external review and the upcoming 25th anniversary of the School.
3. Organize a celebration of the 25th anniversary of the School involving REM alumni, various agencies and departments at SFU.
4. Faculty are encouraged to establish linkages with faculty and students in other departments (e.g. by serving on supervisory committees of students registered in other departments, or adding faculty from other departments to supervisory committees of REM students; giving a guest lecture in other SFU courses).
5. Faculty are encouraged to serve on a committee in the Faculty of Applied Sciences (FAS) or running for election to the post of Associate Dean of FAS.
6. Faculty and students are encouraged to run for election to the SFU Senate.
7. Faculty are encouraged to take the initiative and approach the SFU News staff to write a story when you have important results from research that might be of wide interest.
8. Faculty are encouraged to take advantage of linkages with the media (radio, TV, newspapers).
9. REM faculty and students are encouraged to attend conferences, workshops, or meetings at or away from SFU and advertise REM by taking an appropriate number (e.g. 25 to 100) of copies of the small 1-page folded color brochure about REM and putting them on the registration desk.

5.2 Comments from External Review Committee

"Second, we believe that the reputation of SFU in the Province, in Canada and internationally is largely determined by the visibility of its graduate level research. Unfortunately, excellent undergraduate teaching is not newsworthy! Grant applications routinely require a statement of significant contributions and their impacts. A collection of such "statements of impact" could be a valuable source of publicity and generate greater visibility."

The School provided an impressive list of alumni and we discussed the School's activities with several alumni in person and by telephone. We were left with the impression that there was a need for more exploitation of these valuable contacts. A periodic newsletter to all alumni would be a useful method of maintaining contact, interest and involvement.

Individual faculty are involved in a variety of public service functions. Such service is invaluable and should be encouraged and recognized."

5.2 REM Response

We value the suggestion to collect statements of impact from research proposals. We plan to start doing this.

We also agree that REM alumni can help to enhance REM's visibility on and off campus and be instrumental in search of new opportunities such as student stipends/contacts for current REM students, employment opportunities for students, fund raising prospects and scholarship potential). REM has experience working with its alumni. The celebration of Dr. Chad Day's retirement was a good example. However, REM's linkages with its alumni can be strengthened and rendered more productive. During the Retreat and the May 2003 REM Executive meeting, REM has agreed to take better advantage of its excellent body of alumni and work with the alumni to address needs of the School and alumni. A special committee, involving faculty and students was set up to do this in the September 2003 REM Executive meeting. A number of action items and ideas are currently being worked on. They include:

- Establishing a periodic newsletter
- Organizing a party for local alumni
- Developing a link off the department web page to provide alumni news
- Constructing a link off the department web page where interested alumni could register

- Constructing a link off the department web page to provide an online forum for discussion and information exchange
- Organizing an annual keynote seminar series (could solicit donations to fund it; charge for tickets, publish a transcript for those who could not attend)
- REM alumni are very motivated, perhaps they would be willing on some level to organize themselves (elect a chair and secretary)
- Encourage graduates to sign up as alumni group after they graduate
- The upcoming 25th anniversary of the department has suggested as a theme for the initial contacts.

6. Future plans and visions

6.1 Comments from External Review Committee

"REM's future plans include increased activity in the area of native studies, including pursuit of hiring a CRC Tier II Chair in Native Studies in collaboration with the Department of Archeology and a BC Leadership Chair in Native Governance. These initiatives are viewed as positive in several respects. Over the years, REM faculty, graduates, and students have worked with First Nations communities in various capacities. This background and experience, complemented by new appointments, would enable REM to be an appropriate and constructive partner with Aboriginal people and communities engaged in post-graduate training and capacity-building. Aboriginal involvement in resource management in BC specifically and Canada as a whole can be expected to gain even greater prominence in future, and thus the REM/SFU initiative should be supported."

6.1 REM Response

We agree. As the external review states, REM is pursuing a CRC Tier II Chair in Native Studies in collaboration with the Department of Archeology and a BC Leadership Chair in Native Governance. These initiatives are timely, fill an important need in student education, training and capacity building and are well supported by expertise in our School and faculty from other Department at SFU. The Center that could be developed under leadership of BC Chair in native Governance will be the first of its kind. It has the potential to provide leadership and support in the area of treat negotiation and land-use planning which can be expected to be of large significance in BC and Canada in the immediate future.

6.2 Comments from External Review Committee

"The committee noticed that women and other employment equity groups are under-represented among the faculty cohort, with one full time, one half time and one quarter time female member of faculty among a 14.25 cohort. Increased representation would be desirable both for equity (balance) purposes and to provide diverse role models to students. We understand that some efforts have been made in recent years to improve the balance, but that these were not successful. In the absence of any imminent retirements, REM should strive to fill any vacancies caused by current faculty departures and to attract diverse PDFs to improve this situation, as well as encourage and support its existing female faculty."

6.2 REM Response

REM continues to be aware of its gender inequity and is committed to further rectify this situation in its faculty hirings. With the hirings of Dr. Pam Wright, Dr. Evelyn Pinkerton, Dr. Marie Josee Fortin and Dr. Kris Rothly, REM had hoped to improve the gender distribution of its faculty. Unfortunately, Drs. Wright and Fortin resigned because of personal reasons. REM will strive to fill vacancies by female faculty members and attempt to attract a more diverse group of PDFs and adjunct faculty members.

6.3 Comments from External Review Committee

"The School provided us with an impressive list of goals. We support these goals but suggest that priorities be assigned to them."

6.3 REM Response

Considering the current opportunistic climate of university administration, there is little merit to prioritizing our goals. Our current list of goals and strategic plans includes issues that REM feels very strongly about and that it is trying to accomplish at all times.