AN EVALUATION OF THE GUIDELINES FOR COAL DEVELOPMENT, BRITISH COLUMBIA

By

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ABSTRACT

In 1976, the British Columbia government established a Coal Development Guidelines (CDG) program with the goal of directing coal-mining development in a rational and comprehensively planned manner through procedures established to appraise impacts. An evaluation of the program, dealt with in this thesis, showed that, during seven years of rapid economic growth, 20 B.C. coal mines were appraised, yet the CDG program remained formally unchanged.

The researcher designed an evaluation study model which included profiles of the program's policy, historical, and institutional contexts. Three mine project proposals—Line Creek, Greenhills, and Sukunka—were used as case studies to provide evidence of program actions. Seven critiques assembled by various authors were reviewed and compared for common elements, contradictions, and ambiguities. A sample of 23 government and corporate representatives involved in the program was interviewed and their responses to a questionnaire were analysed to determine program outcomes. The adequacy of the CDG program was to be determined from the criteria developed within the study model.

The findings indicated a range of concerns over the adequacy of the CDG program in meeting its goal. Overall program adequacy was not determined, however, because of
changes in the economic and social climate and the diversity of interests which precluded a clear conclusion. A limitation to program adequacy was identified which came from two planning processes that operated for coal development appraisal—the official, multi-participant guidelines and unofficial, internal, public-sector planning process. It was observed that often the guidelines were not followed in actual decision-making. Program actions were frequently adequate, however, in terms of the specific planning documentation.

The unexpected outcome of varied individual attitudes toward program credibility suggested that major program revisions may be necessary. Possibilities for program change, with their implications, were identified. An utilization-based evaluation was recommended for within the provincial government.
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# Glossary of Abbreviations

## Federal Government and Related Agencies or Organizations

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<td>EMR</td>
<td>Department of Energy, Mines and Resources</td>
</tr>
<tr>
<td>DFO</td>
<td>Department of Fisheries and Oceans</td>
</tr>
<tr>
<td>DIANA</td>
<td>Department of Indian and Northern Affairs</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of the Environment</td>
</tr>
<tr>
<td>DREE-ITC</td>
<td>Department of Regional Economic Expansion--Industry, Trade and Commerce</td>
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<tr>
<td>EARP</td>
<td>Environmental Assessment and Review Process</td>
</tr>
<tr>
<td>FEARO</td>
<td>Federal Environment, Assessment Review Office</td>
</tr>
<tr>
<td>FIRA</td>
<td>Foreign Investment Review Agency</td>
</tr>
<tr>
<td>IEA</td>
<td>International Energy Agency</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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## Provincial Government Agencies or Committees

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<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ACR</td>
<td>Advisory Committee on Reclamation</td>
</tr>
<tr>
<td>ALC</td>
<td>Agricultural Land Commission</td>
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<tr>
<td>CCCD</td>
<td>Cabinet Committee on Coal Development</td>
</tr>
<tr>
<td>CCED</td>
<td>Cabinet Committee on Economic Development</td>
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<tr>
<td>CGSC</td>
<td>Coal Guidelines Steering Committee</td>
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<td>EEC</td>
<td>Economic Evaluation Committee</td>
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<tr>
<td>ELUC</td>
<td>Environment and Land Use Committee</td>
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<td>ELUS</td>
<td>Environment and Land Use Secretariat</td>
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<td>ELUTC</td>
<td>Environment and Land Use Technical Committee</td>
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<tr>
<td>F&amp;W</td>
<td>Fish and Wildlife Branch, MOE</td>
</tr>
<tr>
<td>MAC</td>
<td>Minesite Advisory Committee</td>
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<tr>
<td>MAG</td>
<td>Ministry of Attorney General</td>
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<td>MAg</td>
<td>Ministry of Agriculture and Food</td>
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MED: Ministry of Education
MEMPR: Ministry of Energy, Mines and Petroleum Resources
MoF: Ministry of Finance
MHR: Ministry of Human Resources
MISBD: Ministry of Industry and Small Business Development
MLPH: Ministry of Lands, Parks and Housing
MMA: Ministry of Municipal Affairs
MOE: Ministry of Environment
MOF: Ministry of Forestry
MOH: Ministry of Health
MOL: Ministry of Labour
MPS & GS: Ministry of Provincial Secretary and Government Services
MTH: Ministry of Transportation and Highways
NECC: Northeast Coal Coordinating Committee
NECO: Northeast Coal Development Office
NEC IMC: Northeast Coal Impact Management Committee
RAU: Resource Analysis Unit
RPU: Resource Planning Unit
SECC: Socio-Economic Coordinating Committee
SPU: Special Project Unit

**Program Guidelines, Studies, and Processes**

ALR: Agricultural Land Reserve
CDG: Coal Development Guidelines
CØALMØD: Coal Model
EARP: Environmental Assessment and Review Process
EIA: Environmental Impact Assessment
LDG: Linear Development Guidelines
MMG: Metal Mine Guidelines
NECS: North East Coal Study

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SIA  Social Impact Assessment  
TA  Technology Assessment  

**Industries, Consultants, and Crown Corporations**  

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<td>BC Hydro</td>
<td>British Columbia Hydro</td>
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<tr>
<td>BC Rail</td>
<td>British Columbia Railway</td>
</tr>
<tr>
<td>BCRC</td>
<td>British Columbia Research Council</td>
</tr>
<tr>
<td>BCRIC</td>
<td>British Columbia Resources Investment Corporation</td>
</tr>
<tr>
<td>BCUC</td>
<td>British Columbia Utilities Commission</td>
</tr>
<tr>
<td>CNI</td>
<td>Crows Nest Industries Ltd.</td>
</tr>
<tr>
<td>CNRC</td>
<td>Crows Nest Resources Calgary Ltd.</td>
</tr>
<tr>
<td>KRL</td>
<td>Kaiser Resources Ltd. (Greenhills)</td>
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<tr>
<td>NHB</td>
<td>National Harbours Board</td>
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I wish to express my gratitude to the following individuals for their assistance during the various stages of my research program and thesis writing:

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Finally, I wish also to remember my friends and family who have provided emotional support and faith during my work on this study, especially my father, who gave me the belief that (except perhaps in coal development) it is better to have tried and failed than never to have tried at all.

- Margaret Gibson, 1984
Chapter 1

INTRODUCTION

Research Theory and Techniques

It's nice to be the drafter of a well-constructed plan
For spending lots of money for the betterment of Man
But audits are a threat, for it's neither games nor fun
To look at pleas of yesteryear and ask, "What have we done?"
And learning is unpleasant when we have to do it fast
So it's pleasant to contemplate the future than the past.

- K. E. Boulding (1972)

1.1 Introduction

Project appraisal was a technique introduced in a British Columbia program intended to appraise the social and environmental impacts of coal development. This study applies evaluation research to examine this project appraisal program. A rationale for bringing these two investigative approaches together is suggested here, and the implications of the rationale on this study design are discussed. A model based on the principles identified, and the methods and techniques used to conduct the study, are described, and limits to utilization of the conclusions and recommendations are discussed.

1.2 Project Appraisal

The intellectual atmosphere, in which issues
surrounding large-scale project development were identified, has many roots. Introduction of the National Environmental Policy Act in 1969 has been cited (Bankes and Thompson, 1980) as marking the beginning of project appraisal in the U.S.A., but this legislative precedent, based on environmental concerns, does not completely indicate the genesis of project appraisal. The theoretical influences are much more extensive and varied. From rising conservation awareness came the observation that excesses from large, complex projects were seriously eroding the natural environment. From economic theory came the concept that costs to common property were externalities not valued by the market, but if internalized through project appraisal techniques, the project may become more equitable. Emerging traditions in art and architecture have had their influence. Through the German Bauhaus School, epitomized by Frank Lloyd Wright, came the idea that projects should be functional yet related to and respectful of nature. This premise gave rise to the idea that projects should be environmentally designed.

Observations of systems thinkers—the ideas of cyberneticists—drawing from areas including ecology and physiology, noted the systematic nature of biological and social organization. From these observations, the need to include feedback for monitoring project implementation was identified. Liberal democratic ideology also contributed to the public's ideas of project appraisal. The belief that
the public had a right to protection meant that projects should be reviewed by government representatives to address the range of public safety concerns. Furthermore, this belief meant that the public had a right to be informed of the risks, and the collection of information to ascertain these risks became the implied responsibility of a large public administration empowered to assess public choice. From these varied conceptual traditions came the current ideas about the design of projects.

Accompanying this conceptual growth for project appraisal, development of new methods and techniques gave rise to different approaches and criteria for measurement and prediction. From biology—for some the most characteristic approach to project appraisal—the methods of environmental impact assessment arose. At the same time, and linked much more closely to the economic indicators considered useful to the making of public and private decisions, measurement techniques of cost-benefit analysis were developed. In addition, numerous other methodological approaches evolved to account for impacts of project development which these two prevailing methodologies did not address. Social impact assessment was one technique concerned with identifying and measuring social repercussions; technology risk assessment focussed on the impact of specific technologies; and risk assessment was developed to measure the hazardous elements in project development.
Techniques for public planning and policy-making were also evolving. In the province of British Columbia (hereinafter referred to as B.C.), with its heavy dependence on resource extraction, a more integrated approach to resource management and planning was espoused. Into this atmosphere was born the Guidelines for Coal Development (B.C. ELUC, 1976) which introduced a program known as the "Coal Development Guidelines" (CDG) for project appraisal.

With the drafting of this guidelines document, the framework for project appraisal in B.C. moved from an emphasis on environmental measurement techniques to one which described an overall rational planning process. Unlike its predecessors, the guidelines were to be an ongoing process, comprehensive in assessment and review, including all of the impacted concern dimensions resulting from large-scale coal development. The process was to be rational, occurring prior to decision-making, and was to follow the rational-comprehensive approach to planning and the scientific method to problem-solving.

Major resource developments such as coal mining and processing will change environmental, social, and economic conditions in the region of development. Careful planning of large-scale coal developments is therefore necessary to ensure that a rational approach to managing land use, environmental, and community impacts is undertaken prior to final decisions on coal and related developments being made. (B.C. ELUC, 1976, p. 3)

Attempts to integrate the intelligence of project appraisals into public decision-making, project planning,
and then into management procedures, provided experience which allowed the pitfalls of this approach to become widely recognized. The major problem facing project appraisal was that programs which attempted to administer and coordinate the assessment and review of new project proposals underwent a development phase and had not reached "climax [sic]" where the program parts worked well together (Barp and Gallimore, 1979) when they came under severe criticism; hence, program change became a key issue for critics. Other critics of project appraisal focussed on the appraisal methodology. The misuse of cost-benefit information in making project decisions was frequently criticized, and alternatives to project appraisal for management were suggested. One critic of the prevailing environmental assessment technique was C. S. Holling (1978), who offered another approach—the adaptive assessment and management process. A critic of rational and comprehensive planning, John Friedmann (1973a) made observations similar to Holling's. He suggested a further alternative, transactive planning. Both of these alternative approaches to project appraisal and planning were characterized by provisions for group learning experiences, including those where the fallacies of assuming total a priori knowledge were recognized and uncertainty was to be built into planning. Dunn (1971), Hampton-Turner (1971), and Schon (1971) were theorists who provided similar recommendations. Advantages to these alternative approaches to
project appraisals were cited as the multi-participant learning that takes place, and where more conservative, lower-risk decisions were being taken.

More recently, the participant learning processes, mutual learning, and horizontal communication approaches are being questioned. The main criticism is that they do not address the political elements of power and responsibility in their prescriptions for project appraisal. Today, political debate appears to be polarizing around two ideological trends. In the view of voluntarists, authority for project decision-making should be centralized where economic objectives are paramount. This view is opposed by self-management proponents who believe that responsibility and authority for decision-making should be decentralized, and community and environmental objectives should become significant priorities. From this debate comes interest in a new direction, with implications for project appraisal, one "... which recognizes the multi-dimensional nature of social knowledge" and successfully joins together "... the requirements of science and social justice, rationality and the public interest" (Weaver, Jessop, and Das, 1983, p. 32).

1.3 Evaluation Research

Evaluation research and project appraisal have evolved in the same milieu, but the former arose within a
somewhat different set of academic traditions—those of education, health, and social welfare. These applied humanistic disciplines drew their concepts from such pragmatic philosophers as John Dewey, who was an early proponent of learning from interactive experiences, and from emerging inquiries in psychology where attempts were made to describe and explain psychological functions in terms acceptable to the natural sciences. This tradition was combined with those of Marx and Engels, whose theories of society and culture suggested that historical changes in society produced changes in individual human consciousness and behaviour.

The impacts of the Industrial Revolution and the resultant social inequity, combined with the material abundance of the Western world at the turn of the century, created a need and at the same time an opportunity to develop new, large-scale public welfare and education programs. Because these programs involved large numbers of personnel, and their provision was costly, information was required to determine the effectiveness or success of these programs. Furthermore, aspirations developed among practitioners and administrators to create a science which would produce a kind of knowledge that would allow systematic prediction and an ability to control the process and outcomes of their programs.

To produce this information and achieve these goals,
several approaches were utilized. Measurement techniques, developed in training programs in World War II, gave rise to the application of statistics in designing testing instruments where the indicators used were changes in individual cognitive or behavioural abilities as evidenced by the widespread use of IQ tests, beginning in the 1950s. Years of application refined the use of and identified the constraints for determining program effectiveness through testing techniques. More recently, another set of tools for determining program effectiveness has come from accounting where techniques for public administration, designed to aid in determining priorities and budgets for competing program needs, were based on cost measures and objectives identification.

From this background, evaluation research arose as a recognized entity in the 1970s into an atmosphere dominated by two additional influences. The theories of Piaget influenced humanistic philosophy such that programs were redesigned with innovative approaches to group activities, emphasizing varying individual cognitive abilities. Concurrently, an awareness of individual differences—problems of the handicapped and victims of drug and alcohol abuse, social disease, and penal injustice—became subjects of issues for an emerging public consciousness. Public expectations were created that individual problems in a just society could be resolved by providing a wide range of
alternative social and educational programs.

Observations of the attempts which followed to integrate the new social consciousness into existing education and social health and welfare programs provided suggestions that the programs were not meeting their objectives. To many observers, the quality of education appeared to decline and social health and welfare programs were judged to be too costly; thus, costs to government for provision of alternatives to meet varying individual needs became the focus of public debate. The problem in many cases was that in attempting to address the concerns of individuals and applying new theories to program design, the programs underwent a development phase where frequent change was a common characteristic. Counter public pressure called for certainty, consistency, stability, and improved accountability and created an administrative move toward improved management practices and controls based on the findings of program evaluations.

Among practitioners of evaluation research, methods were in debate surrounding the expectations for valid and reliable evaluation results and the instruments required to measure changes in program outputs. Attempts at scientific rigour placed constraints on the evaluation design, thereby denying competing perspectives. In response, an alternative, holistic, inductive approach was counselled with an emphasis on qualitative designs to overcome traditional design
An application of this approach to program change was made in the federal publication for evaluation approaches, Guide on the Program Evaluation Function (Canada, 1981), which was designed to improve government policy-making and priority-setting through program change. The recent recessionary trend has resulted in cuts to programs without the benefit of evaluative processes or evaluation research. The decisions for program changes are being made on the basis of ideology, rather than on evaluative findings. The decisions for program changes are based on program costs alone, supported by the ideology that because individuals should be productive contributors to society and not dependent on the state, many education and social health and welfare programs should be eliminated. These prevalent ideas of government voluntarists have resulted in programs being eliminated on the basis of ideology, rather than on evaluative findings. These moves may provide the necessary reductions in government spending through the functional imperative of reducing or eliminating programs, guidelines for ethical choice have not been applied. Examination of human aspirations and values is absent from these program-change decisions. If evaluation research is to offer aid in this dilemma, it must address moral questions.
1.4 Study Rationale

Identification of the usefulness of evaluation research to judge project appraisal programs has existed for some time (Mitchell, 1979). Numerous other authors have suggested that a rational-comprehensive project appraisal process should include evaluation as an intrinsic element in the process (see Figure 1). Friedmann's (1973a) transactive planning assumed evaluation occurs as individual participants change, as does the program, through learning. In seven years of operation the CDG included no evaluation function in its program design, and it was not officially revised from its original description. An existing body of evaluation theory and practice could be applied that would add to the ability to determine how it operates, and the purpose of the program, including its impacts and effects on society.

There are beliefs and assumptions underlying the application of evaluation research to project appraisal processes such as the guidelines, which should be understood before an evaluation of the process can be undertaken. One is the belief in interdisciplinarity. Jantsch (1971) has described interdisciplinarity as a teleological and normative concept, where cooperation and coordination are required among disciplines to link social, environmental, and economic assessments with development planning, implementation, and management. A problem facing any process
Figure 1 Theoretical CDC Appraisal Process

Source: After Duffy (1977)
which requires the cooperation and coordination of many disciplines, as with the guidelines, is the rigidity of disciplines and of disciplinary concepts or beliefs as to what is good or bad for society, with a division between the physical sciences (or the traditional scientific disciplines) and the humanities, such as sociology, psychology, the arts, or religion. Of these two basic systems of belief, one comprises a positive scientific view, where phenomena are believed to be subject to deterministic laws and are therefore amenable to objective scientific analysis, with the participant a passive impartial observer; the other a humanistic imperative view, sees phenomena as probabilistic and subject to deliberate alteration, with the role of the participant in project appraisal becoming more active in the design and planning of the future.

The beliefs of the participants in project appraisals such as the CDG may not be as polarized as the above distinctions may indicate. However, it is useful to present these different views because they pervade both the evaluation and appraisal processes. The roles, actions, and concerns of various participants in project appraisal depend upon their personal and professional systems of beliefs. A conflict may emerge because different biological and social theories underlie the beliefs of those who review project assessments, but ideological and practical assumptions often guide the beliefs of those who support coal development.
This assumption implies that for an evaluation of the CDG program, the source of participant concerns and their involvement with the process must be understood.

An interdisciplinary belief in the joint application of varied perspectives and their accompanying decision criteria to social, environmental, and economic decision-making also has a role in design of the guidelines decision model. Consistent procedures for the integration of assessment information and of potential development information are necessary to ensure compatibility between the theoretical assumptions guiding the approach and those that guide development planners. Also necessary is the explicit identification of the procedures for decision-making, and the rendering of their assumptions. With the decision-making process clarified, the CDG, as the program for project appraisal, can be evaluated in terms of its structure and its specific results, and recommendations may then be offered.

1.5 Study Model

An interdisciplinary approach to the project appraisal process suggests a substantially different role for evaluation of the CDG program than that of the traditional approach to government program evaluation. Traditionally, the emphasis of program evaluation has been on economic rationality, where the variables measured have been costs and numbers of people employed. Often, evaluation was
viewed as a scientific research activity and the traditional logic of program evaluation required that the impact of the program be determined in comparison with what would have happened in the absence of the program. This approach is deficient as a study design for the evaluation of the CDG for several reasons, including the nature of mining activity, their frontier locations, and the small number of potential coal mines. There are also significant site-specific variations which make each coal development sufficiently different that it would be difficult in a traditionally designed experiment to account for alterations among developments; therefore, a classical approach to evaluation has not been used in this study.

Instead, another approach has been utilized wherein evaluation of how a government program operates, the purpose of the program, and its impacts and effects on those concerned, is conducted. This approach is more qualitative and follows, in part, guidelines identified by the Treasury Board of Canada (Canada, 1981) for program evaluation. This methodology also combines effects or impacts evaluation with a program operation evaluation, following Poister (1978), and an holistic, inductive, naturalistic inquiry adopted from Patton (1980). To realize this goal, more than one technique was used to collect evaluation findings, and a workable strategy was required to find a balance among rigorous design methods and situational realities. Thus,
observations and data on the program were obtained in a variety of ways and then aggregated.

The study model as described by Day (in Day, Brady, Bridger, Freisen, and Peet, 1977) is shown in Figure 2. The context or program profile of the CDG was prepared by delineating three aspects: (1) the policy environment, (2) the historical context, and (3) the institutional arrangements. The actions of the CDG were identified by examining three cases: (1) Line Creek, (2) Greenhills, and (3) Sukunka, through a systematic evaluation of their respective documents. The outcomes of the program, including expected and unexpected impacts, were identified by reviewing the existing written critiques of B.C. government project appraisals, and by administering a standard questionnaire and open-ended interview of twenty-three participants in the CDG process. From these observations, the adequacy of the CDG program was assessed and potential changes with their attendant implications were identified. Recommendations and suggestions for further research were made.

1.5.1 Program profile

Programs are sets of organized activities conducted by government institutions in pursuit of established policy objectives: they can be thought of as vehicles for carrying out policy. (Poister, 1978, p. 5)

Within this definition, the first evaluative effort was to identify the policies which set the CDG objectives in context. This effort is discussed in Chapter 2, and draws upon
Policies, Goals, Objectives for Coal Development

History of Coal Development Guidelines

Institutional Arrangements for Coal Development

Actions of CDG-document analysis

Impacts of CDG

Written critiques, questionnaire/ interviews

Utilization of Findings

Adequacy of CDG and Recommendations

Figure 2 CDG Program Evaluation Model
federal and provincial government statements of policy and private consultants' observations of coal development program objectives.

An understanding of the social environment which conditions the CDG is needed to describe the program profile. Evaluations which fail to take into account the previous and prevailing social situations may have difficulty providing useful recommendations. The experimental philosophy identified earlier, where the approach to evaluation is holistic, inductive, and naturalistic, assumes that the program's historical context is essential for understanding the program. The holistic aspect of the research design allowed gathering of data on a number of aspects of coal development in the effort to synthesize a complete picture of the social dynamics surrounding the CDG program; thus, the element of time has been treated as an important factor with its own particular meaning.

Details of the institutional arrangements provide the final factor in the program profile, including the various ministries, both provincial and federal, and their legislative and organizational structures with the various inter-agency committees. An understanding of the program activity and outcomes becomes clear only after appreciation is developed for the CDG program in light of its surrounding policy, history, and institutional arrangements. This type of research design replaces the emphasis on controlled
experiments with a dynamic process orientation, and research is able to focus on the actual operations and impacts of programs over time.

1.5.2 Program actions: Document evaluation strategy

Evaluation of the CDG program was also made by examining the documents which represented a record of the actions of project appraisal. A strategy was developed to assist in reviewing the prepared documents which combined several different approaches. Boothroyd (1979) suggested a format and a series of issues that should be included when evaluating social impact assessments. Heffernan and Corwin (1975) suggested a series of questions as an aid to evaluating the environmental impact statement. Cope and Hills (1979) identified the need for a centralizing analysis which would bring the various impacted dimensions—social, biophysical, and economic—together. They saw a critical need to address the inter-relationships among the various assessment dimensions and suggested that a unitary comparison procedure was needed, one which aimed for analytic coherency. An overall approach to document evaluation appears in Baron's (1981) working paper on "meta-evaluation." A combination of the above has been developed and a document evaluation strategy (shown in Appendix A) was devised, specific to the CDG program. This strategy was applied to 22 documents produced by the three companies which had successfully
completed the CDG process by December 1981; that is, Line Creek, Greenhills, and Sukunka mines. The documents included: formal submissions as the staged reports; a series of information or meeting briefs prepared by the proponent; and the review documents produced by the coordinating government agencies (listed in Appendix B).

The purpose of this document evaluation strategy was to generate a more general understanding of the nature of the coal assessment process. The intent was to understand the submissions by looking at the important features in order to judge the adequacy or inadequacy of the CDG process on the grounds that the understanding which resulted could be later used in appraisals and enhance the usefulness of project proponents' reports and government responses. Features of the documents that were examined were authorship, timing, purpose, format, methodology, and content. The criteria employed to evaluate each feature arose from the following issues and assumptions.

The CDG process required the generation of a great deal of information which involved numerous individuals with a variety of specializations. In this document evaluation strategy, the organization responsible for the report and its conclusions was distinguished from the authors of the report because, according to J. O'Riordan (in a letter to Crows Nest Industries, August, 1977):

In general, [the CGSC] prefers that the company
submit its report under its own name rather than the consultant's name . . . . This clarifies that the company is committed to carrying out the design details and the further study recommendations in the report.

Switzer (1983) identified three options for companies when preparing impact studies and documentation: (1) the company may use entirely in-house staff and present documents as the sole authors; (2) they may provide coordination in-house and hire consultants for specific tasks; or (3) they may contract out-of-house consultants for the entire guidelines process. Authorship was assessed with the belief that the formal reports should reflect a corporate commitment to integrate environmental and socio-economic information into its decision-making and planning for coal-mine development.

The CDG process assumed that a comprehensive evaluation of the proponent's documentation was conducted and that this was to be reflected in all of the review documents. The assumption was that the effectiveness of the review documentation depended on the ability of the CDG coordinator (CGSC chairman) to receive information from the various participants. Thus, the coordinator of the various review documents was noted as author and the lead agency in which the coordinator operated was identified using the hypothesis that the agency's policies would influence the nature of the CDG coordination.

Many critics of the CDG program have identified
timing as a significant problem. Heffernan (1975, p. 256) noted that up to a year or more is generally necessary for "major projects affecting little-studied resources having broad impacts over an area, or establishing precedents for new technology." Boothroyd (1979, p. 5) concluded that a "series of impact reports is preferable to one statement." The CDG program, in operating with procedures to account for the above considerations, required studies which took a minimum of eighteen months and were reported on in several phases. The CDG process was designed so that reports would be produced early enough in the planning process to affect design and late enough in the research process to give more than baseline data from secondary sources. This later information was to be used for management activities such as monitoring design. If the CDG program was a "decision-making process," then the timing of approval-in-principle became significant. Early government approval reduced corporate uncertainty, whereas withheld decisions increased the perception of control by government agencies. To examine these issues, timing was evaluated in each case study by addressing three questions. The time of each report was noted relative to the approval-in-principle, with the period calculated from submission of prospectus to the point of a formal government decision regarding the project, and the report's temporal relationship to other research was considered. Finally, the critical-path
planning for each project was examined to note how each company planned its CDG studies relative to other corporate planning.

The third feature, purpose of the document, relates to the use for the document information and indirectly identifies potential users of the information. It was assumed that many individuals would read at least one portion of the document. Users of assessment documents may be citizen groups, technical assessors of design alternatives, agency planners, government decision-makers, policy analysts, or resource managers. The users of the review documents may be consultants, project managers, or corporate decision-makers. User expectations affect their evaluation of how well the document meets its purpose. Therefore, documents were evaluated for explicit statements of purpose or terms of reference. The document author's statement of purpose was contrasted with the required purpose to determine if the CDG program expectations were addressed.

Document purpose was also evaluated assuming that many readers would examine only specific sections of the document, those in which they had specific interest or expertise, and information filtering would occur as readers scanned for a mental checklist of subjects and facts which they felt the report should include. Assessment reports which tended not to meet these expectations were often rejected on technical grounds with requests for resubmission,
while review comments which were repetitive, redundant, or inaccurate, were not utilized by the proponent.

There was also a need to evaluate the form of the message, and a number of questions were examined concerning the overall format to determine the adequacy of the documents in facilitating information accessibility. The body of the document was evaluated for clarity of message and format of the report. The documents were evaluated for summation techniques, form of assumption and constraint identification, form of information presentation and the format for presentation of mitigation and implementing plans. Evaluation of the format also considered the readability of the report, because terminology, especially for non-technical readers of technical reports, may be a problem. Therefore, provision of glossaries to identify acronyms and technical terms, and use of graphics were examined. Finally, to facilitate confirmation of report accuracy or authenticity of information, it was assumed references would be provided, and these were examined.

A rational, comprehensive, CDG program design defined an overall methodology or model. In this evaluation, a distinction was made between content-specific techniques or disciplinary methods which were conducted to identify the environmental, social, or economic characteristics of the development location and this larger, rational planning framework. Each proponent document was initially
evaluated to identify its overall function within the project appraisal process. It was assumed that the proponents' studies were defined by the overall program model, and the documents were examined to determine if they met the model's stated objectives, thereby reflecting the rational process. This was verified by examining the documents' methodological descriptions. The documents were also examined to determine if there were specific methods identified to relate site characteristics to the features of the development proposal and its alternatives.

A more detailed set of evaluative questions was applied to three methodological features of the CDG proponent documents: inputs or data into the assessment; analytical assessment approaches, as well as government methods for review of proponent inputs and analysis. All the inputs into the assessments or the data used were evaluated as to type and source. It was assumed that both primary site-specific data as well as secondary data should be utilized in a comprehensive process. A comprehensive process should also collect information from as wide a number of sources as possible to determine the existing data base.

A second element of the appraisal methodology, the analysis, was evaluated by examining prediction and forecasting techniques. A probabilistic element constituted one important dimension of the impact assessment. The size of the impact was a second dimension which involved an estimate
of value by the expert conducting the study. Both constituted characteristics common to an assessment methodology and were implied in guidelines. Thus, the documents were questioned for evidence of these assessment dimensions. Forecasting techniques were examined for analytical comprehensiveness, including with and without the project speculations, effects of the development on all populations, and the range of possible forecasting techniques.

The review documents were evaluated for similar criteria. It was assumed that the review methods were similar to those described in Chapter 4 of this study. It was difficult to examine a review technique which would interrelate or aggregate the biophysical evaluation with the separate technical, economic, and social evaluations. Nevertheless, as in the proponents' assessment documents, the review documents were examined for comprehensiveness. It was assumed that a comprehensive review document should have representation from as many impacted dimensions as could possibly be affected by the project. Each agency, therefore, should review the proposal from their jurisdictional and expert perspectives. This assumption was based on the fact that agencies asked to participate in the review would have staff with appropriate expertise capable of evaluating the proponent documents and have a budget and time for the review activity, because such reviews should not be added to staff's existing responsibilities. Finally, the review
documents were examined for evidence of available opportunities for public non-governmental examination.

The final feature, content of the proponent documents, should provide the main evidence for rational pre-planning. Because they are used by governments to evaluate the proposal, some elements of the development plan would be included in each document. Since they are specific to coal mining, the proponents' documents are normally technical in nature, with information changing as development planning proceeded and new information was forthcoming. In this evaluation, changes in development plan content over earlier documents were identified. The content of the development plan was also evaluated for comprehensiveness in planning for all phases of the project: exploration, construction, operation, and decommissioning. Inclusion of feasibility studies for new coal mines or opportunities for expansion were also evaluated as a part of an expected long-term, rational planning approach. Elements of the project that should be included in each document's content were the mine site, transportation, storage, loading, power facilities, and plant preparation plans.

Because the project would alter existing conditions, an evaluation of content included a review of the environmental setting descriptions which identified indicator categories that would be most useful for monitoring as the project proceeded. These categories included features of the
biophysical, social, and economic environment. Because alteration of the environment would reach beyond the boundaries of the mine development property, additional extended indicators should be considered in a comprehensive assessment. The environmental and social settings are not impacted until the project begins and actually changes their state; however, the methodology of assessment requires prediction of impacts prior to development. Therefore, impact prediction should be a distinguishable characteristic of the assessment document content. Assuming all impacts do not have the same value, and as an aid to determining which indicators should be monitored, the content was evaluated for classification of impacts.

The content of economic planning and assessment was included in the evaluation criteria. There is an issue of confidentiality surrounding information on coal marketing and financial arrangements, as well as for costs of production. These data are necessary for the government's independent evaluation of the viability of the project because of their responsibility as owners of the resource; therefore, this information was sought.

The content of corporate environmental and social planning was evaluated. It was expected that this would change over time in concert with the changing development plan, and it was anticipated that changes in environmental and social plans would be presented in assessment documents
as a continuing reflection of the proponent's decisions and commitments. Options and future planning were also evaluated.

The content of a review document should provide a development plan critique, with a response to each aspect of the development impact indicator category. Evaluative criteria assumed the documents would include the following: advice on options not considered by the proponent, relevant government planning concerns, issues identified which should be examined in more detail, additional regulatory requirements, and identification of sources of additional information. The document evaluation strategy concluded by summarizing the observations of each document feature and assigning a judgement of adequacy based upon the above criteria.

1.5.3 Program outcomes and impacts

CDGs were evaluated on the basis of the program's outcomes and impacts. The outcomes and impacts of the guidelines may be viewed as both planned or primary changes in coal development and secondary or unexpected changes coming from or induced by the actions of the CDG program. The intended outcome is a coal mine that has proceeded through the guidelines and that has/has not gone into production. The unexpected outcomes include the information on environmental, social, and economic systems produced by this
program and their attendant effects on the perceptions of the individuals involved. The guidelines process may have influenced participants perhaps in opposition to the objectives of the program, and in that sense is unexpected.

Three evaluative methodologies were designed to provide evidence about the influence of the CDG on the individuals involved. First, observations were collected from a range of sources to give a broad view of the program's effects. A review was conducted of previous critiques of the program and related published material. A code for analysis was used to clarify the findings of these critiques (see Appendix C) and critics' comments were grouped according to this classification. The comments were examined for similarity of ideas, differences, or conflicts in opinion, and for issues which were absent. These groupings were then summarized to see if a pattern of opinion as to program impacts emerged.

Limitations to the use of secondary critiques were their lack of structure in systematically examining the program characteristics, the small range of participants the critics considered, and their critical frameworks that may have missed comment on useful program aspects.

Therefore, a second methodology utilized primary observations obtained through 23 of the interviews, employing the questionnaire (shown in Appendix D) which was administered independently to all individuals, each of whom
was experienced in the assessment and review of new coal
development in B.C. (see Appendix E for list of respon-
dents). The questionnaire was an attempt to collect both
an overall view of the program and data that may suggest
useful alternatives or improvements to the program. A
secondary objective of this methodology was to begin to
devise program specific indicators of attitude because
there is no existing valid or reliable method for measuring
achievement of the CDG goals. To this end, the question-
aire was designed to reflect the CDG program's major
objectives as well as to identify issues outside of the
program which may have some bearing on the program's out-
come.

The administration of the questionnaire involved a
dual strategy approach, as suggested by Poister (1978, p.
346). The questions lent themselves to quick respondent
answers amenable to statistical analyses, while encourage-
ment of open-ended elaboration allowed for spontaneity and
expressiveness. Both were used in combination to structure
most interviews. Allowing for flexible responses meant that
some respondents omitted questions for various reasons; for
example, when they felt that a particular aspect of the
program was not within their realm of expertise or, in their
opinion, the question was not relevant to an evaluation of
the CDG program, or a question was not germane to the
overall issue. While three respondents declined to complete
the questionnaire, they did offer verbal observations.

Interpretation of the specific items occasionally required mutual clarification of terms and/or events because the background of the respondents varied with the program, and the interviewer lacked specific experience with the program. Throughout the interview, clarification occurred which provided a history of events and background to government constraints or corporate procedures incidental, but relevant, to the way in which a response was phrased. To encourage communication, the questionnaire was administered in a manner that allowed for variation yet was expected to limit the validity of the survey.

Potential respondents were selected from lists of participants in the process, and included individuals who indicated willingness to cooperate. A sample of program administrators (past and present), review agents from both biophysical and social service agencies, consultants, and coal industry personnel, were chosen. The sample was not random, but may be considered representative. Once identified, the respondent was telephoned to obtain an agreement to be interviewed, appointments were arranged, and a copy of the questionnaire mailed. Most interviews were conducted in Victoria, B.C., in the respondents' offices, and ranged in time from twenty minutes to four hours, with an average of two hours' duration. Other interviews were conducted in Sparwood, B.C., Vancouver, B.C., and Calgary, Alberta.
Attempts to include regional personnel were not successful. From this open-ended interview, information additional to the questionnaire format was recorded (by the interviewer in note form) and later analyzed in a participant profile.

The analysis of the questionnaire/interview was twofold. First, the results of the questionnaire were subjected to factor analysis where the responses were consolidated into eight program aspects. From this consolidation, the aspects were analyzed in an iterative process of cluster and discriminant function analyses. A scatter plot of two significant aspects was produced. A second analysis applied the theories of human motivation and of individual growth and development to devise a profile of types of concern, which enabled classification of the notes arising from the interviews to produce a participant profile of concerns.

The qualitative results of the interviews provided the third source of information on the attitudes of participants in the CDG program, giving a range of perceptions. When questions arose throughout the study, additional data were sought from the respondents. At the conclusion of the research process, information supplemented the interviews, including conversations with approximately 40 individuals, many of whom were not connected with the specific program but did have a theoretical background or extensive experience with assessment and/or review procedures in
other jurisdictions.

1.6 Data Evaluation

Use of this study design limits the utilization of the findings to some degree. One overall limitation derives from the fact that there was no overt commitment from senior B.C. government program administrators to participate and employ the findings. The literature dealing with evaluation research has suggested that, to ensure that evaluation results are utilized, senior management must be committed to implementing the findings from the outset (Patton, 1978).

There are also limitations to the results within the methodologies. For example, study cases were selected for detailed evaluation at a time when the CDG program had appraised 22 mine proposals, with five having completed the process and two of the latter having proceeded to construction. Thus, two of the cases chosen were clearly biased toward successful projects. However, of the other 20 choices, most were terminated by company decision or were still within the study process. It is conceded that, because the CDG operates in a case-specific manner, analyses of other projects would yield somewhat different observations, particularly with reference to the question of federal (in the case of Quinsam Coal) and international (in the case of Sage Creek Coal) involvement.
The document evaluation strategy was revised iteratively as experience was gained with its application to the case study documents. The original format was much wider, allowing for the addition of extensive comments. Identification of the detailed structure of the assessment and review documents through the document evaluation strategy was a labour-intensive activity. Case study documents were reviewed twice to ensure consistent application of criteria. In retrospect, the level of detail produced was higher than necessary for the purposes of this study. This level of detail might be appropriate, however, for an individual project review. Therefore, a recommended use for this method would be in the planning of review agency evaluations, as criteria have been identified through which coal project documents could be assessed.

A further limitation of the results arises from the choice of individuals asked to complete the questionnaire and to be interviewed, which was biased toward working-level government agencies in Victoria. Thus, the concerns of government planning and the problems of conducting reviews tended to dominate over the concerns of the proponent. Because of the nature of the CDG program, in particular its complex institutional characteristics, the concerns and observations from a variety of government agents was felt to provide a more useful indication of the range of problems faced by the comprehensive CDG
program. As well, their wealth of personal experience through review of numerous projects gave a rich source of observations.

The CDG administration's willingness to cooperate and provide information wherever possible greatly facilitated clarification and correction of errors not identified by an external evaluation alone. The net result of these data collection and analytic activities is an information set that supports the analysis provided in the final chapter of this study.
Chapter 2

COAL DEVELOPMENT

Policies, Goals, and Objectives

The complexity of the energy issues requires that a policy be a living process and that policy-makers be prepared to respond quickly to changing situations.


2.1 Introduction

Characteristics of contemporary public policy regarding Canadian coal and related developments, especially in B.C., reflect contradictions in social values underlying contemporary governments and, specifically, expectations for government involvement in coal mining and development. The stated policies of governments for the coal industry in Canada have often been fragmented and inconsistent; therefore, discussion here will be primarily related to the recent period of B.C.'s stated coal policy. A summary of some of the conflicting policies and goals which direct the agencies involved in assessing new coal projects in B.C. follows.

The mining of coal, while contributing to the economy of Canada, has traditionally disrupted both human
and natural environments. The industry historically has undergone fluctuating production, with demand decreasing when alternatives to coal have been found. There has often been conflict among the supporters of free enterprise who cite economic advantages of exploiting the resource and those who prefer government protection from the negative effects of coal mining, with its historic volatility. For both sides, public policy is stated in terms of mine safety, royalties and taxation, environment, community stability, reclamation, transportation, and alternative energy sources. Evidence for this group of public policies is collected by interpreting statements of public officials and representatives of government agencies with respect to coal and the coal industry, and is embedded in the general beliefs and values of public officials and public service employees.

2.2 Ideology and Demand for Policy

in Coal and Related Developments

Contemporary public policy is characterized by many contradictions inherent in the nature of liberal democracy or in the general beliefs about the role of government and the rights of private individuals. Marchak (1981) identified three features by which Canadian society believes it is organized: the first is that a representative government is supported by periodic elections; the second, that economies are not directed exclusively or even mainly by governments; and thirdly, that judicial courts evaluate the merits
of individual, corporate, and government actions with reference to the legislation provided by governments. Within this framework a range of values and beliefs is held. One assumption is that majority rule is achieved, and another that there exists an equality of condition among people. Both of these beliefs imply that there is a homogeneous Canadian population and that governments do not represent the interests of any one section of the population over another. The assumption that Canadian governments are subject to the wishes of its citizens is also fundamental to the system. Another fundamental belief is that for a democratic system of private enterprise, private ownership of economic resources is necessary, including the ownership of the means of production, the property, and the profits derived from these ownerships.

Marchak (1981) has also noted several contradictions at the core of this view of government. Governments are managers of the system, subject to the wishes of the majority yet with an obligation to protect minorities; but the economy is not directed or managed by governments. Production is assumed to operate within a free market, although in the case of coal, ownership to the rights of the resource in the ground is often held by the Crown. A mixed economy exists, essentially with private and public managers both having rights and responsibilities in the decisions involving extraction of coal. A further dimension of
contradiction lies within this problem. The belief in
governments' management responsibility implies independent
but interacting public institutions, one balancing another
and responding to actions taken in other sectors. Petak
(1981) illustrated this problem when he referred to the
complex process of managing human affairs within the con­
straining elements of social, technical-scientific, admini­
strative, political, legal, and economic factors. The
problem is that only part of one of these complex sub­
systems, that of exogenous and societal constraints, is
subject to electoral vote. Individuals who administer
both the sub-systems of environmental management and the
resource-use allocation undertake decision-making responsi­
bilities without any direct electoral accountability.

The belief in the right of the public to participate
in public policy and government management has encouraged
individuals and groups to express their concerns. Expecta­
tions exist that the government will respond to these
concerns with some action. Brooks (1974) identified the
creation of new formal institutions, new laws, and rein­
forced older laws as a response to the increased concerns
over the use of mineral resources. While there have been
economic concerns, most of the conflict with coal mining in
Canada has come from the perception of unaccounted exter­
nalities, as when wildlife, fisheries, and water or air
quality are affected. As a result, environmental protection
has become a major public preoccupation with respect to coal (Gibbons, 1980), and these concerns have been expressed by many individuals and groups.

The scientific community has noted with increasing concern the changes in environmental characteristics due to surface mining (Dick and Thirgood, 1975). Similar concerns were expressed by interest groups such as the Fish and Wildlife Federation (Warden, 1976) who encourage controlled coal development, provided it takes into account all of the costs and problems accompanying coal mining. Wilson (1980), a management systems analyst, identified health, environmental, and safety problems associated with coal development which required public policy and government control. He also noted concerns about emissions release, noise, erosion, solid and liquid waste disposal, and water consumption. Cameron (1980, p. 4) saw coal, more than any other source, as "the fuel that feeds the conflict between the environmentalist and energy developer." As a spokesman for academic environmentalists, he argued that all phases of the industry must be considered in formulating policy to address the environmental problems. This belief in the total comprehensiveness of impact evaluation extended to the social sciences, with a trend in the late 1970s which placed increasing emphasis on the socio-economic and community problems created by coal development. Policies to alleviate these concerns were called for, and techniques of both
environmental and social impact assessments, incorporated into the CDG, became the tools of public policy designed to evaluate these concerns. Cost-benefit analyses were added to ensure a more rational approach, but problems arose in addressing most of these issues because they were intangible and not amenable to quantification in monetary terms.

Another set of problems arose when the above concerns were addressed, particularly when appraisal techniques were applied outside the legislative framework. The court system had difficulty evaluating the merits of a situation because most of the processes, in order to retain management flexibility, were described in guideline form and not in legislation. Nevertheless, expectations for government to operate with a consistent coal policy came from the coal industry, labour representatives, and local communities. Coal producers looked for reduced freight rates, tax concessions, subsidies, and government assistance for research and development, as well as for reduced uncertainty, consistency, and clarity. Trade unions expected they would have mining regulations which would ensure safer working conditions—a continuing issue in the history of the coal industry. Communities, already dependent upon coal mining for employment, hence their existence, advocated government protection and assistance for local mines, as well as support for attendant local infrastructure such as schools and hospitals.
Other communities appealed to government for policies which opposed coal development because it threatened existing community resources, including tourism, fisheries, and recreation. In the international sphere, where there was pressure to produce a rational, long-term national strategy for coal to meet forecasted potential demand (Ezra, 1978), governments were asked to develop clearly defined energy and environmental objectives, and to adopt a consistent and efficient set of public policies to achieve these objectives (Berkowitz, 1982; Wilson, 1980). Finally, there was pressure from foreign markets to follow a public policy which encouraged coal export by ensuring the provision of the necessary infrastructure and a positive financial environment (Hay, Hill, and Rahman, 1982).

The pressures placed on government by this range of interests were often articulate and well organized and, although frequently conflicting, each expected a government position which reflected its concerns. Governments, however, have internal concerns that they wish to see reflected in public policy. While the term "government" implies a unitary body, there exist diverse units or groups within the complex structure of government. Elected officials and appointed bureaucrats of different ministries and agencies have different views of the nature and substance of coal policy. Opinions, based on individual values and experience, are stated largely with respect to the future role of
coal in world energy resources, the economic growth of the country or province, foreign relations, or protection of the environment. The policy which emerges as a result of the complex nature of expectations and contradictions, is a product of all public and private interests. As perceptions of the nature of these interests change, so changes the emphasis of public policy, reflected in altered legislation, shifting emphases on the application of regulations and guidelines, changing administrative structures, and apparently flexible, while frequently conflicting, public statements as to the substance and emphasis of Canadian coal policy.

2.3 Canadian Policy for Coal Development

The major justification for government involvement in managing coal development, and in providing public policy toward coal, comes from public ownership of mineral rights (Gibbons, 1980; Thompson and Eddy, 1973). Section 109 of Canada's British North America Act indicates that all public lands, mines and minerals, and royalties belong to the provinces. There is one exception to provincial ownership of coal-bearing land in B.C.—the Dominion Coal Blocks of the Crowsnest Pass. The rights to the surface and minerals of this land belong to the federal government through an 1897 Crowsnest Pass rail agreement. In 1983, the federal government announced plans to sell this property, and B.C. Coal
Ltd., a subsidiary of B.C. Resources Investment Corporation (BCRIC), negotiated for leases. However, B.C. claimed that the land should be returned to the province and benefits from any development should belong to the province because of provincial ownership of natural resources within their boundaries (Sopow, 1983). The provincial position has become one of landlord and proprietor in terms of the coal resource, which gives B.C. the one requirement for jurisdiction, ownership and, hence, the right in law to develop public policy over use of the coal resource.

A second aspect of jurisdiction, the legislative authority for coal development, is claimed by both federal and provincial governments. The federal government, while having little colour of right to ownership, has legislative capability for influencing the coal industry in a variety of important ways. Many interjurisdictional disputes have occurred between the federal and provincial governments over the development of natural resources, but in the case of coal this has been small. In the 1970s, with growth in the coal industry in the western provinces, the federal role was primarily support for research and development (Patching, 1980).

2.3.1 Federal policies

The federal government has been viewed as having limited influence in directing Canadian coal development
(Gibbons, 1980). However, federal policies relating to energy self-sufficiency, transportation, environment, foreign investment, regional development, taxation, and research and development, have been important in setting the general policy framework for the Canadian coal industry.

In 1974, Canada supported the creation of the International Energy Agency (IEA) under the Organization of Economic Co-operation and Development (OECD), to come into effect in 1976, to address energy self-sufficiency for Canada. As a result, in 1977, a Canadian ministerial energy conference initiated development of a Canadian coal policy. While the pilot document was not completed, the federal objective of obtaining self-reliance by minimizing dependence on foreign oil was emphasized. A need was identified for increased resource information, and to achieve this the federal Department of Energy, Mines and Resources (EMR) signed an agreement with the province of B.C. which included $10 million for geological, manpower, transportation, and townsite studies for the northeast B.C. coal development. A second more general action was the establishment of the Coal Assessment Group in EMR. The federal initiative encouraged Canadian utilities to fund research and development into coal conversion in an effort to substitute coal for oil and natural gas, and studies to examine gasification and liquefaction as well as methods of burning coal using new technology such as fluidized-bed combustion. Funding
was provided for studies on the availability of capital in the development of Canadian energy supplies (Canada, 1978). In 1979, the IEA arrived at policies for action regarding the use of coal, with proposed studies based on expectations of rapid growth in world demand for thermal coal.

There were few coal-related policy measures in the National Energy Program released in 1980, although some encouragement was given to the development of the Atlantic region's coal resources. There was concern within the industry (Berkowitz, 1982), with fears that a successful coal industry would be treated "the way the federal government treated the oil and gas industry--imposing higher taxes, pressing for Canadianization, and enlarging the public sector role" (Hay et al., 1982, p. 93). Federal recommendations and subsequent initiatives were re-emphasized by the Special Committee on Alternative Energy and Oil Substitution in 1981 (Canada, 1981). This committee's recommendations focussed on research and development, including investigations into fluidized-bed combustion, and a limited number of projects directed toward the export market, with stringent environmental safeguards.

While the overall emphasis of federal policy encouraged future coal development, there was some anticipation that new activity would lead to increased regulation. This belief arose from a number of federal policies which indirectly affected coal development. The Department of
the Environment (DOE), with its mandate to maintain quality of the environment, expressed concerns over the acid-producing potential of coal combustion. As a counter to hopes for a dramatic increase in the use of coal as a domestic and international thermal energy source, belief in climatic constraints on coal combustion which threatened to become acute in a few decades were voiced (Lovins, 1976). While the DOE supported policies to control sulphur and nitrogen oxide emissions and to reduce fugitive dust, the federal Department of Fisheries and Oceans (DFO) also had concerns regarding the extraction of coal where it could affect salmon fisheries.

The federal government, in seeking policy directions to reduce foreign energy dependency, took other actions which could affect coal development. An industrial-benefits policy was adopted to encourage the use of Canadian parts and services in major projects, and foreign investment in Canadian development was to be reviewed by the Foreign Investment Review Agency (FIRA) to ensure that significant benefits from these projects accrued to Canada. From the industry's perspective, these policies added to the uncertainty about government intentions regarding coal development.

A stabilizing approach came from the Department of Regional Economic Expansion (DREE) later called the Department of Regional Economic Expansion--Industry, Trade and
Commerce (DREE-ITC), with policies directed toward reducing regional economic disparity, including promotion of regionally balanced population growth. This department was also committed to the philosophy of improving industrial and community infrastructure, as a means of achieving their aims (Springate, 1973). Several DREE programs encouraged and advanced economically marginal projects using government compensation to attract investment, particularly international, in Canada. DREE programs were designed with the eastern Canadian manufacturing industries as the main target, but they did support the development of primary industry in other regions. Coal was seen by DREE as an important source of long-term employment and growth, and the federal government wanted to continue to "create the kind of climate in which the profitable, orderly and vigorous development of the coal resource could occur" (Lessard, 1977, p. 11). This view became linked with a policy which operated under the principle that, from a competitive point of view, transportation should be provided to offset the cost disadvantages associated with mining in a less attractive location. This action resulted in DREE, in association with its B.C. provincial counterpart, Ministry of Industry and Small Business Development (MISBD), providing the funds for the northeast coal studies. A joint planning effort by the two agencies resulted in a "$13 million, 5-year study program . . . one of the most ambitious ever
undertaken in Canada" (Canada, 1982, p. 1). To facilitate and coordinate this process, the Canada-British Columbia Subsidiary Agreement on Northeast Coal and Related Development was struck, although the approach ran counter to earlier statements by DREE that primary and service activities were incapable of expansion of sufficient magnitude to solve regional unemployment or under-employment problems (Springate, 1973).

In general, the varied federal departmental policies which influence the coal industry are supportive of development although, in practice, the federal government has only limited direct jurisdiction over the coal resource. Given the history of federal-provincial conflict over exploitation of other natural resources, the abundance of coal reserves, and the federal preoccupation with oil in its energy policies, federal coal policy may be expected to favour continued development of coal. For the inherently incompatible concerns of the environmentalist and the energy developer, federal government policies have offered little direction or solution, and it was left to the provincial government to develop coal policies which would provide the context in which programs such as the CDG could address these difficult issues.

2.3.2 Provincial policies

In B.C., coal is the most valuable single mineral
commodity and averages over 20 per cent of total mineral production (B.C. MEMPR, 1982). B.C. coal policy statements, released in 1977, 1979, and 1980, stressed the need for consistency of the coal development objective with overall provincial energy, economic, environmental, regional development, and social objectives. The approach was that "investment in viable coal resource developments will be encouraged . . . to ensure that maximum net benefits accrue to the people of British Columbia and Canada" (Crook, 1982a, VII-2). The principal policy components, as summarized by Crook (1982b) and Gibbons (1980), are listed in Appendix F.

Statements of coal policy found in publications of the Ministry of Energy, Mines and Petroleum Resources (MEMPR) (B.C. MEMPR, 1980) and MISBD (B.C. MISBD, 1981a, p. 9) identified coal policy objectives for the province as maximizing the economic and social benefits to B.C. and Canada from coal development, promoting energy security for B.C., and providing a healthy investment climate which is attractive to coal development.

2.4 Inter-Ministerial Goals and Conflict

With a clear government policy favouring coal development, conflict arose with the goals of various agencies. Gilbert (1976, p. 7) noted that "the wide variety of goals adopted by government agencies may prove contradictory and will certainly make an evaluation of their efforts highly
complex." A tabulated analysis appears in Appendix G to illustrate the interaction of various agency goals with the goals which favour coal development. These management areas were selected for analysis because the agencies responsible for those areas had participated in the government review of new coal development proposals as a part of the guidelines process; it was assumed that individuals operated within the mandate or goals of their respective agencies.

The comparison shown in Appendix G was designed to illustrate goals of management areas that are likely either to complement or to conflict with goals of coal developers. The conflicting or complementary nature of the goals was indicated by assessment of the probable impact that would be caused by coal extraction on the resource management area. The decisions in this analysis were based only upon consideration of the agencies' stated goals. The judgements do not consider measures such as reclamation, environmental design, site development, joint management practices, or compensation that may mitigate the impacts.

The data provided in Appendix G indicate that, in some cases, the goals are independent of each other and the conflict is fundamental and direct. Preserving air and water quality, agricultural land, forests for timber production, wildlife and fisheries, recreation, aesthetics, and heritage resources are examples of resource management
areas with goals that conflict with coal extraction. In most cases, individuals representing these goals have their roles and responsibilities defined by biophysical ministries such as environment, forestry, or agriculture. Other resource-area goals conflict only at the time of extractive activities. For example, goals for waste management and for environmental planning would not be necessary if resource extraction and discharge of residuals did not occur. Individuals representing the agencies with these goals come from the Ministry of Environment (MOE). In other situations, the conflict may be less direct or clear; for example, goals for managing public health, settlements, education, and Indian affairs may conflict with the need for resource communities to house coal-mine workers; however, goals favouring coal extraction and the social-agency goals may be considered complementary, due to possible positive regional economic benefits.

Some agency goals focus on planning for the use rather than the preservation of their resource. The resource areas of land and corridors are examples. In these cases, the agency goals may complement coal extraction. However, if land and corridor management goals were changed to favour preservation, conflicts might arise. Coal development may also directly complement the goals of an agency, as in that of economic and industrial development, where the MISBD has goals in common with coal developers. Sometimes,
goals for a resource area may not be stated, are complex or unclear, or they are provided simply to regulate the use of the resource. For electricity, petroleum, natural gas, metal minerals, and sand and gravel resources, it is likely that an assumed goal favouring their development would complement goals favouring coal extraction, unless an overlap of resource use threatens, or there is competition for production of service needs. Individuals from the MEMPR represent this assumed goal favouring development.

Several conclusions may be drawn from the above summary. The statement of goals varies according to the value or interest an agency places on the need for resource use and development, versus preservation. Some ministries such as the MOE favour preservation, but other agencies, particularly social services, are ambivalent regarding coal development. Some agencies strongly support coal development, as do representatives in the MISBD or the MEMPR. Because coal is a very important part of B.C.'s economy, the tendency has been to modify conflicting goals in favour of development. The provincial response has been to relegate the concerns created by conflicting goals to the project appraisal process. The philosophy has become one of planning for optimal use through project appraisals which include "appropriate considerations for fish, wildlife, soil, aquatics, water and air quality" (B.C. MISBD, 1981a, p. 18), leaving provincial economic objectives paramount.
Using this approach, the provincial economic strategy dominates, and it places the achievement of several agencies' goals contingent upon the appraisal process for realization, whereby the potential exists for large-scale cumulative dissatisfaction among those who are working toward their agency goals and yet are not satisfied with the guideline process.

This analysis points to the complexities of public policy within the Canadian coal milieu. It serves as a source for understanding the nature of the problems facing government representatives working within agency constraints, and for illustrating the source and nature of inter-agency conflicts that are so often observed by industry (Crouse, 1978).

2.5 Objectives of the Coal Development Guidelines

Although the Guidelines for Coal Development (B.C. ELUC, 1976) have no clearly specified program goals, objectives may be inferred from three sources: (1) the text of the CDG document, which contains statements that may be interpreted as objectives; (2) individuals in the program who have assumed program objectives; and (3) administration which has identified what it believes to be the program objectives. A synthesis of these provides the statement of objectives which is used in the remainder of this evaluation:

... [to] establish a procedure for the developer,
Government, and the public to assess and manage all major impacts . . . providing procedural direction for impact assessment and management, . . . specify the types of information required . . . for the review of permit and licence applications . . . . (B.C. ELUC, 1976, p. 3)

The guidelines are designed "to minimize negative environmental and social impacts" (Crouse, 1978, p. 6). Because "environmental impact assessments and permit applications are required for government approvals," the CDG are "designed to ensure that projects are technically acceptable and can be supported by government and the general public" and "to formalize a mining environmental review process" (Hawes and Gadsby, 1982, pp. 1-3). Dick and Ringstad (1981) identified the objective of the CDG as being a major environmental management tool for coordinating government agencies and industry, and for implementing regional environmental management objectives. O'Riordan (1979, p. 207) saw

. . . the guidelines as a method of ensuring orderly planning so that environmental resources could be protected at a reasonable cost and public services required to support the mines could be provided when needed.

The Coal Task Force (B.C. ELUCS, 1976, p. 120) said the CDG was "a planning tool that shapes the whole development program from its inception to be responsive to the economic, social and environmental goals of the region development." McDonald (1982), chairman of the Coal Guidelines Steering Committee (CGSC), concluded that the objective of the CDG was to assist coal companies in the province
in the preparation of environmental impact assessments for their developments, while Crook (1981, Personal communication), who was secretary of the CGSC, identified the most important objectives of the coal guidelines review process as being the following:

(i) to provide the basis for a Provincial Government decision on the overall public acceptability of a coal mining project through an appropriately designed assessment of the scope and magnitude of potential environmental, social and economic impacts;

(ii) to address problems and concerns where these cannot be directly regulated by licences, permits and approvals pursuant to legislation;

(iii) to provide mining companies with a single, overall point of contact with the Provincial Government for coal mine development in British Columbia (i.e., the Coal Guidelines Steering Committee);

(iv) through effective coordination by the Coal Guidelines Steering Committee, to ensure that all interested government ministries and agencies are aware of, and involved in, decisions on mining proposals; and

(v) to ensure that mining companies are aware of those ministries and agencies of government with which they should be discussing their mining proposals during the planning stages.

The essence of these varied statements of objectives may be classified into three groups: (1) procedural, where the task is to coordinate the process; (2) appraisal, where the tasks include both assessment and review, and are to be carried out in advance of the project; and (3) management, where the tasks involve ongoing activities which occur after the project has been implemented. The objectives for the
guidelines program may thus be summarized as (1) to assist in the planning and preparation of information necessary for government and industry to appraise projects by impact identification and mitigation through project design; (2) to coordinate a government interministerial review of the assessment through a resource consultative process; and (3) to guide the developer through requirements for various permits and licences, by providing assistance in joint industry-government activities to manage the impacts of coal extraction.
Chapter 3

HISTORY OF COAL DEVELOPMENT

The Guidelines Program

*History cannot be erased although we can soothe ourselves by speculating about it.*

- M. Atwood (1982)

3.1 Introduction

To examine the circumstances which motivated the implementation of the coal guidelines with reference to the economic, political, and social situations at the time of the decision to bring in guidelines, the nature of planning, including preparation for crisis, must be noted (Day et al., 1977). In spirit and intent, the architects of the guidelines process attempted to integrate the predictive, analytical insights of the emerging fields of impact assessment with the action orientation of corporate development planning. The guidelines were designed as an administrative program to collect and coordinate information on new coal development, eventually to be fed into a larger government decision-making process (Crook and Stackelrodt-Crook, 1976). This government initiative came in response to growing public and political concern that unrestrained resource
development had detrimental environmental and social consequences. The introduction of the program was a provincial response reflecting the collective consciousness of the times. The environmental movements between 1969 and 1976, together with the rise of the planning process, combined with the traditional concerns of coal-mining health, safety, and labour unrest, to produce more active B.C. government involvement.

The history of the CDG is discussed in this chapter with respect to the development of four major regions within the province, vis-à-vis the evolution of public planning, relationships with the national federation, and the larger world economy. The CDG historical context is also described in four parts: (1) the early period (1871-1969) which encompassed 100 years of what appeared then to be fluctuating coal production—but which now may represent a time of relative homeostasis for the coal industry in the long term (see Figure 3); (2) a second phase (1969-1976) which saw an escalation or expansion in which exponential growth in coal production marked a shift in the structure of the entire coal-producing system, until a threshold was reached, accompanied by perceived environmental and institutional crises and corrective government actions, including development of the guidelines program; (3) a phase of implementation (1976-1981) which followed when institutions developed and many new coal projects were planned, each of which
Figure 3 Coal Production and Value in B.C., 1890-2000

Source: B.C. MEMPR, 1979, 1982; Worobec, 1982
required extensive studies. The guidelines program evolved administratively as it was applied to these many new coal proposals. Public sector planning processes also developed in part to study coal-related projects in northeastern B.C.: and (4) a fourth phase (post-1981), perhaps incomplete, which is characterized by rationalization, examination, and accountability.

3.2 The Pre-Escalation Period: 1871-1969

Originally used for domestic heating, coal became economically important by providing energy for the Industrial Revolution. There are world-wide characteristic growth patterns, and increases in production have been followed by declines, as changing technology, alternative energy sources, or shifting market conditions dictated. The first coal mines in B.C. were opened on Vancouver Island in the mid-1840s through the trading activities of the Hudson's Bay Company (HBC). The right to trade in coal was granted by the British Parliament in response to two claims; first, that there was potential profit for British interests and coal extraction would serve the growing steamship activity and, second, that there was a strategic need for defence in light of threats from the U.S.A., with particular instability in Oregon, and from Russia; thus, coal was needed to fuel the Pacific fleet (see footnote next page).* By 1871, when B.C. joined Canadian Confederation, the influence
of HBC was fading, and a new structure emerged—that of powerful, local family ownership of individual mines.

This experience of coal expansion in B.C., in many respects, follows those of the United Kingdom and of the eastern U.S.A. In all cases, the increase in coal extraction was linked to the building of railways, the construction of which was heavily financed by government grants (Scott, 1981) and accompanied by widespread granting of land titles. In B.C., the Esquimalt Nanaimo line and the southern Crowsnest CPR line offer two specific examples. The railways facilitated new mine openings and contributed to local and regional booms. A worldwide decline in coal production from 1910 to 1915 resulted from cutbacks in export trade, the domestic use of oil instead of coal, problems of mine safety, the closure of regional smelters, and economic changes due to worldwide, pre-war depression (B.C. ELUCS, 1976; Scott, 1981; Taylor, 1978). The onset of World War I brought a second increase in production and some stability to the industry until a decline in 1929, for a decade, coincident again with world economic depression.

*An account of British naval interest in coal mining, actions of the Dunsmuir family in building their "empire," and the sources of labour conflict and struggle may be found in J. Scott, "Coal Mining in British Columbia Then and Now: 1835 to Present." Unpublished manuscript, c/o C. Weaver, SCARP, U.B.C., 1981. A more thorough account of this period appears in C. G. Taylor, Mining: The History of Mining in British Columbia (Victoria, B.C.: Hancock House, 1978).
World War II increases in production held from 1943 to 1950, but the industry declined sharply once more with the development of petroleum and natural gas reserves. This resulted in the closure of all Vancouver Island mines with Michel Collieries the only large mine remaining in continuous production.

A parallel with the U.K. and U.S.A., more than a superficial sharing of world events, may be drawn, as there were a number of similar and associated concerns. Problems of a regional nature are a common feature of the northeastern U.K., West Virginia, and to a lesser extent Vancouver Island, the B.C. Crowsnest, and the Coal Branch of Alberta. Each of these regions experienced periods of expansion followed by periods of decline. In the U.S.A. production increased from 20 to 500 million tons by 1910, and declined in response to local reduction in demand for steel (B.C. ELUCS, 1976, p. 17); the period 1900 to 1914 was a boom for northeastern U.K., but was followed by reduced production due to a lack of technological upgrading (Carney, Lewis, and Hudson, 1977). Uncertainties as to oil competition and shifting sales patterns prevented new investments in the Vancouver Island mines and a recession here also resulted (Taylor, 1978).

Features of the declines are typical of boom-and-recession cycles. Scrapping of physical capacity, local environmental scarring, and changes in population
distribution were some regional problems. In the short term, surplus regional population occurred. In the longer term, people migrated from these coal-mining communities and moved into other areas of the economy, leaving ghost towns. In England, the decline of the northeastern region in 1914 was accompanied by social unrest and the rise of manufacturing industries in the southeast. By contrast, in southeastern West Virginia the surplus population tended to stay in the region and "bemoan its fate" (Garreau, 1981). In B.C. and Alberta, the migrating population was absorbed into expanding petroleum and forestry industries, leaving the mining regions for increasing urban opportunities.

Demand for different kinds of coal has also varied, causing most producing regions to face overproduction crises from time to time. Attempted solutions to the problem have been very similar across the regions. Worker productivity was criticized, followed by increases in working hours, wage cuts, and mass layoffs. Mines were sometimes closed prematurely due to damage or purposeful flooding, which made potential reserves inaccessible. Coal associations lobbied for protectionism, demanding tariffs on imports and subsidies to producers. There was an increase in amalgamations, and quotas, price fixing, and output restrictions were commonly practiced (Carney et al., 1977). Bitter labour conflicts were often the result, both in England and the U.S.A. B.C. inherited a working class
familiar with labour organization when experienced miners from England were recruited to solve the local manpower shortage problem. There was of necessity and, Scott (1981) has suggested, by design, an attendant increase in government involvement. Labour conflict was certainly a part of B.C. coal development's history:

It was a difficult time for labour because, for the most part, federal, provincial and local governments favoured employers rather than organized labour in conflict situations. (Wejr and Smith, 1978)

Then, in 1912, the longest strike in the history of B.C. occurred in the coal mines of Vancouver Island.* A set of underlying social problems accompanied coal extraction. Generally, insufficient profits were reinvested in new equipment, transportation, infrastructure, and terminal facilities. Companies spent little money improving health provisions for the semi-skilled, semi-literate workforce. This was manifest in the poor physical conditions of coal-field housing and associated community services such as sanitation facilities. Depressed communities were also a typical feature of the U.K. and U.S.A. coal areas, while the Coleman-Crowsnest region of southeastern B.C. demonstrated

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*The strike, which began with a lockout by the mine owners, lasted for two years. In 28 years, 373 men were killed in Vancouver Island mines due to gas explosions. After the lockout, workers were forced out of their homes. Strikebreakers were imported from England. The companies hired their own police, and provincial police were involved in local riots and shootings. Mass arrests and detentions followed. The strike effectively destroyed the union (Wejr and Smith, 1978).
these same problems up to the 1950s.

Loss of potential reserves, regional volatility, and social unrest combined to set the scene for deepening government concern, yet government involvement was seen as the major problem within the coal industry. Anti-socialist reaction and an attitude of intense anti-government sentiment characterized the private interests of the mining industry, yet coal-mine labour leaders were active in labour oriented Canadian political parties such as the Canadian Cooperative Federation (CCF) (later the New Democratic Party [NDP]) and which, together, produced a classical, political polarization. In the 1920s and 1930s there was an increasing demand for housing and health reform, and for the development of regional policies for coal-field areas. In England in the 1930s, there was a move toward the nationalization of strategic coal industries, and increasingly the coordinating power of government was used. In the U.S.A., anti-poverty measures were undertaken, but private interests could not undertake the massive investment needed to reconstruct a faltering industry. In both countries government expenditures focussed on providing fixed capital for settlements. Loans were taken to reconstruct transportation systems and provide health and educational services, commercial areas were reconstructed, and experiments were conducted in new town construction (Carney et al., 1977). In the U.S.A. and U.K., government expenditure was expected to
solve the problem of regional disparities, and secondary manufacturing industries were promoted as part of an integrated solution to uneven regional development. Later, after 1937, recovery in British, American, and Canadian coal regions occurred with the stimulus of World War II demands for arms production, and with government aid, coal production was again brought back to capacity. In the late 1940s, with the trend to substitution of coal by oil and natural gas, the industry appeared to be facing virtual extinction on a global scale. Numerous demands for government funding meant that, despite its large financial powers, the government could not prevent industry collapse, with an attendant increase in inter-regional disparities.

The decade prior to the resurgence of the coal industry in B.C. in 1969 witnessed the evolution of several components of the coal-producing system, and the structure of the coal industry itself changed. From a large number of small, labour-intensive operations owned by powerful local family firms (for example, the Dunsmuirs of Vancouver Island) emerged large, capital-intensive, multinational organizations. Oil companies with backgrounds in other energy and mineral commodities became increasingly involved in Canadian coal through acquisition of large numbers of coal leases (Hay et al., 1982). Concurrently, trade became concentrated almost exclusively with Japan and, in 1968, the first long-term contract was signed between Japanese
interests and Coleman Collieries, followed in 1969 by Kaiser Resources Ltd. The change in western Canada from 100 mines in 1930, producing 7.9 million tonnes a year and employing 14,000 workers, to 89 mines in 1960, producing 6.5 million tonnes a year and employing only 2,800 workers, illustrates the impact of this evolution (Shaffer and Associates, 1980).

The decrease in the work force was due in part to changes in mining methods. Early coal mining used labour-intensive underground methods, while the emerging systems used surface processes (strip or open-pit), which are substantially more capital-intensive. The change of method gave rise to a different set of concerns. Worker safety was less of an issue, but massive land disturbance became more obvious. Although land allocation was increasingly perceived to be a process in need of regulatory control, it was not until the mid-1960s in B.C. that there was a coalescing of planning processes related to land use. Regional Districts were introduced in 1965 to manage unorganized areas in the province, but many government agencies exercised land-use jurisdictions which were entirely independent of regional, district control.* In B.C., the decade of the 1960s was also characterized by growing conflict among resource agencies with respect to overlapping jurisdictions,

*For a detailed analysis of the historical development of land-use policies and practices to 1975 in B.C., see C. K. Stackelrodt-Crook (1975).
and there was considerable effort to preserve vested interests. It also became increasingly difficult to resolve problems at the working level, and these were often referred to the deputy ministerial level for resolution, where solutions were just as difficult to achieve due to a poor information base and no problem-solving forum (Crook et al., 1976). Then, in 1968, Inter-Section groups of senior, regional resource administrators began meeting on a regular basis to discuss wholly regional problems.

Public development became active at this time, both within government departments, such as highways, and through special crown agencies. The B.C. Harbours Board, a crown agency, was established in 1967 to promote and facilitate harbour development, which they did with Kaiser Resources to plan the building of Robert's Bank, a coal "superport."

Difficulties in the 1960s included a characteristic secretiveness of public developers when planning new developments. Basically, they assumed that if an increase in demand was projected, then action must be taken to meet that demand, without considering alternatives or addressing impacts.

The market for coal had changed as well. The new Pacific Rim buyers required low ash, blended and washed, high quality metallurgical coal, while the demand for thermal coal fell. It was assumed, therefore, that the most appropriate coals for future development in B.C. were not the thermal deposits of Vancouver Island or of the interior,
but the metallurgical deposits of the south and northeastern parts of the province. Further exploration focussed on these regions because they were known to contain marketably desirable coal. Then, in 1966, a massive coal exploration program was conducted in the southeast Kootenays of B.C. which caused a major change in the region's infrastructure. The old communities of Natal and Michel were incorporated into the municipality of Sparwood as part of a redevelopment scheme, and a rail line already in place was used with efficient "unit trains" as the result of contracts between CPR and Kaiser Resources.

The changes in coal-industry structure, mining methods, scale of activity, geographic focus, issues of concern, and government initiative and action accumulated. Together they ushered in a transformation in the coal industry. There was a 30 per cent increase in the production and value of coal in B.C. in 1969, and these have continued to escalate exponentially until 1982. The period 1969-1982 had seen over half the total historical coal production in B.C., and yet a new pattern of stability had not emerged. What did result was a coal-producing system in flux, undergoing continual change, but of a magnitude previously unknown.

3.3 Escalating Regional Impacts: 1969-1976

The 1969-1976 phase saw significant change to four
regions of the province. Two regions were directly affected physically—the northeast Peace River and the Crowsnest-southeast Kootenay regions. The Pacific northwest region was affected in a more moderate way through infrastructure planning and some coal exploration, but the most significant effect occurred in the lower mainland region (Victoria) in terms of the political-institutional, and not the physical, environment. The location of the four regions is shown in Figure 4.

The southeastern coal block of the Kootenays was the region most directly affected by the rapid growth in coal production. The 1969 production increase was the outcome of coal sales to the Japanese steel industry by the then Kaiser Steel Corporation of Oakland through a wholly owned subsidiary, Kaiser Resources Ltd. The open-pit Balmer operation at Sparwood was illustrative of the new industry's operations, and massive exploration activities were conducted at seven other potential new mining sites within that region. Because of the accompanying changes there, new problems emerged which created serious conflict. Significant natural and social impacts occurred as a result of the escalating output and increased exploration. Whereas only 75 hectares had been disturbed by 1975, over 1800 were affected by the Kaiser Mine development, which was then the largest surface-mine operation in western Canada. Kaiser was also responsible for disturbing nearly 1000 hectares
Figure 4 Major Coal-bearing Areas of British Columbia
more through exploration activities (Dick, 1979a). At the same time, Crows Nest Industries with Mitsui Co. was exploring the Line Creek property, Fording Coal and Byron Creek were establishing new roads for their exploration access, and many other programs of core-hole drilling and digging adits and test pits were conducted, as large quantities of coal were required for feasibility studies. As a result, long-term, large-scale land disturbance and the effects on water quality became issues in the southeast Kootenays.

In addition to land disturbances, the population of the Crowsnest region almost doubled in five years, from 6500 in 1966 to nearly 11,000 in 1971 (Dick, 1979b), and one important characteristic of the new population was a strong leisure orientation, reflected in part by an extensive use of recreational and off-road vehicles. As greatly increased accessibility to wildlands was facilitated by new coal exploration and forestry roads, a high demand for outdoor recreation was created (Dick, 1979b). The Elk Valley of this region has some of the most productive wildlife areas in Canada, but it was suggested (O'Riordan, 1981) that if heavy coal development were to occur in the region, destruction of critical fisheries and wildlife habitat was a possibility. Hence, the region became the focus of concern for government agencies managing recreation, fisheries, and wildlife, who were responsible for
conserving these values in the face of a rapidly escalating potential loss. With local interest groups expressing their concern for the increasing loss and damage (Warden, 1976), a climate of confrontation began developing between industry and conservation interests, the vestiges of which remained for the next decade (Dick, 1979a).

This new population also created demands for community services, housing, and recreation facilities, a demand which local government could not meet. Some analysts (Halvorson, 1980) suggested that infrastructure investment by the provincial government during this period was sufficiently minimal that it could be ignored. Provincial investment, however, did come in the form of direct investment and subsidies amounting to $180 million by 1979. The local coal companies also provided some development funds. It was in this region of the province that the issues brought on by the newly expanding coal activity were most clearly felt and expressed. The need for guidelines for specific project planning, to include consideration of environmental and social impacts, was becoming more apparent.

During this same time extensive exploration was also under way, it too with little guidance in terms of environmental considerations, in the northeastern region of B.C. (the Peace River coal block). In 1969, the Quintette property at Babcock Mountain and Wolverine River was explored by Denison Mines, and the Belcourt and Saxon areas
were explored during the mid-1970s. The Sukunka/Bullmoose properties were field mapped and drilling commenced by Brameda in 1969, but the impacts of this exploration were somewhat different from those felt in the southeast coal block. There was no established settlement within 100 km of the exploration activities (Chetwynd was the nearest town), existing infrastructure was minimal in terms of railways and roads, and the impacts were limited to those caused by exploration, mainly surface disturbances with attendant effects on fisheries and wildlife and the loss of forestry values. There was little or no concern expressed about this exploration because of the lack of a representative settlement, and there were no local interests to form an organized regional lobby. Resource agencies were concerned but had insufficient staff to observe or monitor and report on the increasing impacts. While some coal was being extracted in an exploratory underground operation at Sukunka through the No. 1 and Sukunka Main Test mines, there were no surface mines in actual operation and the magnitude of disturbance was much less visible than in the Kootenays.

The third region--northwestern B.C.--which was affected by new coal development may seem, at first, an unlikely area in terms of exploration or proposals for new mines sites. However, to allow the coal from northeastern B.C. to become available to Pacific Rim markets, the infrastructure in terms of rail access and power supply, loading
and handling, and bulk terminal alternatives had to be considered. The region, long envisioned as the terminus of the "Mid-Canada" corridor, was the northwest region of B.C. (Carney and Carney, 1971). The Port of Prince Rupert was seen as Canada's second gateway to the Pacific. As early as 1969, feasibility studies were conducted for handling bulk commodities at Ridley Island, Prince Rupert. This perceived need and the subsequent planning and feasibility studies identified a set of construction, financial, environmental and social factors which had to be dealt with before the exportation of bulk commodities from the northeast could be achieved (Malkinson and Wakbayashi, 1982). A site selection process occurred between 1972 and 1974, including environmental studies which examined elements of risk to the fisheries of the Skeena River (G. Ennis, Federal Department of Fisheries, 1983, Personal communication). B.C. had granted jurisdiction over Ridley Island to the National Harbours Board (NHB) because of the federal commitment to the development of a northern port. The need for public sector planning had become apparent at this time if the prospects for northeast coal were to be realized. In August 1976, the B.C. government announced its support for the development of a coal terminal in Prince Rupert at Ridley Island and for the Canadian National Railways (CNR) to have access for shipments of northeast coal. "This announcement reduced the uncertainty to the CNR, the coal companies, the
Japanese buyers, and potential port investors (NHB) . . . " (Malkinson and Wakbayashi, 1982, p. 18). Because of the earlier studies it was seen as a "proactive not a reactive choice" in terms of fisheries concerns (G. Ennis, 1983, Personal communication).

The fourth region to be affected by the escalation of coal development was the lower mainland of B.C., which differs from the others in that it is "heartland," while the others are "hinterland" to it (Bradbury, 1982). The lower mainland was already highly populated and industrially well developed, and there were two clear responses to increased coal sales. First, the local infrastructure was in place for coal handling and transport, so the impact of increased activity was not noticeably felt in the area, which was already active with the Port of Vancouver and ferry system. Westshore Terminals at Robert's Bank, a wholly owned subsidiary of Kaiser Resources, had begun operations in 1970 with a capacity of about 6 million tonnes a year. In 1970 the first unit trains of 88 cars carried 8000 tonnes of coal (Halvorson, 1980), and by 1972 expansion to Robert's Bank had increased shipping activity and handling capacity to 9 million tonnes a year. Neptune Terminals of North Vancouver was also well developed to handle the loading of bulk commodities, especially coal. The second response was more government involvement, felt in the institutional environment primarily, the administration of which resides
in the lower mainland, particularly Victoria. The impact of increased coal development on Victoria was greater than the new infrastructure, especially in terms of political-administrative relations.

3.3.1 Institutional implications

In 1969, the Social Credit Party, led by W. A. C. Bennett, had been in office for 17 years. Up to that time they had taken what may be called an informal approach toward resource-use conflicts. Responding to public opinion, however, the party formed a committee of five cabinet ministers to consider multi-resource land-use conflicts. This Land Use Committee (LUC) was seen as somewhat passive, doing little to counter the entrenched development-oriented bureaucracy (Crook and Stackelrod-Crook, 1976). There had been no formal requirements dealing with land reclamation until the Coal Mines Regulation Act was finally put through the legislature in 1969, in direct response to the Kaiser Resources surface mine (Dick, 1979a). This act provided for the preparation of a report describing the nature and present uses of the land to be developed with predictions of developmental effects on livestock, wildlife, water courses, farms, inhabited places in the mine vicinity, and the appearance of the mine site. The legislation was later generally judged to be unsuccessful in reducing the impacts, due to inadequate terms of reference for the reclamation
reports and the lack of a comprehensive assessment and planning process. There had been no attempt in these legislative requirements to assess the effects of mining on the social environment (Dick, 1979a). Thus, partly in response to further public concern about the Kootenays, the Environment and Land Use Act (B.C., 1971) was passed in 1971, and the Environment and Land Use Committee (ELUC) was established as a formal cabinet group to provide a broader approach to integrating the individual ministries' approvals of new development projects.

In 1972, an NDP government was elected on a platform which called for, among other objectives, regulatory structures to reduce the risks of damage caused by unrestrained resource development (Payne, 1982; Stackelrodt-Crook, 1975). This change of government created a new political climate. A more active, interventionist role was then taken by government agencies as opposed to the previous traditional approach to public policy (Payne, 1982), and in 1973 a technical and information body, the Environment and Land Use Committee Secretariat (ELUCS), was established. This group, under the direction of ELUC, was to develop new innovative programs to deal with a wide range of environmental and land-use issues. The frame of reference included coordination of information collection and analysis necessary for government and industry to manage impacts (Dick, 1979a). Most of the Secretariat's work involved inter-agency task
forces which provided a government forum for resource conflict discussions. Three units were created: the Resource Analysis Unit (RAU), to handle the various facets of resource inventories; the Resource Planning Unit (RPU), to prepare region-specific plans, provide advice, and examine issues; and the Special Projects Unit (SPU), to prepare guidelines to assess the environmental and social impacts of various development projects and to coordinate the inter-agency groups (Crook and Stackelrodt-Crook, 1976; B.C. MOE, 1976). Another ELUC committee of deputy ministers was established as a technical committee (ELUTC) and a formal decision-making mechanism was described, which involved passing information from the Secretariat through the Technical Committee for comment and recommendations, and then to ELUC for a formal decision. This phase of innovativeness in the mid-1970s was frustrated by the fact that, although there was recognition of the problems, there was a lag in response due to bureaucratic resistance to rapid change. The Secretariat was criticized on the grounds that it had imposed radical changes to the decision-making process (Stackelrodt-Crook, 1975).

The problems at the time were numerous and complex. Resource management policies were thought to have failed because they lacked comprehensive inventories, but some conflicts were recognized and some legislation was changed. Mining permits were required to include reclamation plans,
but where legislation was weak the agencies had to depend on the good will of both the private and public developers. There was no framework of local, regional, provincial, or national planning objectives, all of which gave rise to the corporate belief that government regulations, permits, licences, and controls governing mining operations were both numerous and capricious. Changes in mining policy, particularly taxation policy, came from both the federal and provincial levels of government to give substance to the concern (Payne, 1982). This led to a crisis in relations between the NDP government and the mining industry; and conservation agencies, with shortage of funds and enforcement power, resorted to media publicity (Dick, 1979a).

The oil crisis of 1973 was a turning point in history and, in Canada, increases in the price of oil brought a national energy policy that encouraged development of coal (Robertson, 1981). Potential export growth stimulated activity, resulting in four metallurgical coal proposals in the Crowsnest, nine in the Peace River coal fields, and interest in various thermal sites throughout the province. The B.C. Department of Economic Development (DED) undertook a joint planning study with the government of Canada which indicated the potential for a significant opportunity for regional economic development and diversification based on the development of the Peace River coal fields. ELUC directed ELUCS to advise them on the magnitude of the anticipated
impact but, because there had been no previous assessment processes, information was lacking on likely impacts specific to this region. The identification of approaches and strategies for joint problem-solving was a necessary first step and, by 1975, the problem of large development projects creating extended environmental effects and conflicting with other resource sectors was being well articulated (Brooks and Andrews, 1974; Dick and Thirgood, 1975). Whatever the final form of policies and procedures for provinces or federal government, there was agreement that "engineering and ecology" needed to participate jointly in new project design (Duffy, 1975). During this period there was a feeling that new technology and conservation would solve most energy problems.

In 1975, the ruling NDP was losing popularity and the media had been suggesting that the problems of the mining industry were the sole responsibility of the government (Payne, 1982). The loss of the 1975 election to the Social Credit party, led by Bill Bennett, was seen as a political victory for the mining industry, and the new government was expected to take a different approach to resource management (Payne, 1982). Yet ELUCS, the innovative agency, continued to exist, awareness of the problems continued and, most significantly, the planning of the working-level bureaucracy carried on.
3.3.2 Introduction of coal development guidelines

In deciding whether and on what terms development should proceed, government planners in the B.C. Secretariat identified the need for more detailed information, for specific evaluation procedures, and for investigation into coal policy and development issues. In late 1975, the Secretariat's SPU was instructed by ELUCS to develop a process which would ensure the collection of assessment information prior to the construction of future coal developments and to be in the form of guidelines only, not legislation.

Coal development has assumed a high economic significance in response to rising world prices. In order that the many development proposals in northeastern and southeastern B.C. could be subject to a systematic, consistent and comprehensive appraisal, ELUC issued the Guidelines for Coal Development in March, 1976, which outlines an environment and community impact assessment process . . . . (B.C. MOE, 1976, p. U121)

This essentially technical perspective acknowledged the contributions of scientific analysis to rational decision making. The CDG process, as it was initially described, was a four-stage procedure beginning with a prospectus to identify the proponent's desire to develop a new coal project. A preliminary assessment, contained in a Stage I report, was to identify the existing information at the particular site and to identify the potential problems. A government review was to identify further problems or concerns and aid in the design of additional studies which were
to address those concerns. The results of the site-specific studies were to be presented in a second assessment document, the Stage II report. These were essentially Environmental Impact (EIA) and Social Impact (SIA) statements, to be reviewed by government agencies. The proponent, after completing this review, could proceed to obtaining specific licences and permits in Stage III. The ELUC was then to grant approval-in-principle and the company could begin construction of the new mine. A fourth stage was to be developed which would address implementation and monitoring processes following project construction. In addition to acknowledging EIA and SIA information, a set of "Guidelines for Benefit Cost Analysis" was drafted (B.C. ELUCS, 1977). "Only preliminary benefit-cost analyses were expected in Stage I; more detailed studies should be included in Stage II" (B.C. ELUC, 1976, p. 7).

The sub-units of the Secretariat continued extensive planning efforts. To coordinate the CDG, the SPU became engaged in two activities; the first was educational in nature where they were to explain to developers and consultants the guidelines procedures; the second was a process to review the incoming staged reports. In 1976, the newly formed Coal Guidelines Steering Committee (CGSC) reviewed five Stage I reports (Sage Creek, Line Creek, Quintette, Carbon Creek, and Hosmer-Wheeler) and one Stage II report (Hosmer-Wheeler). It was in this capacity that the SPU
worked within a political perspective that focussed on the CDG as a mechanism for public participation, in the sense that all ministries with concerns were to have an opportunity to review the incoming proposal. The education perspective was supported by the Resource Analysis Unit (RAU) which, among other duties, was to develop methodologies and coordinate standards and education, using publications, workshops, and seminars to encourage public involvement. Technical and scientific educational processes in government and private sectors were supported by reviewing and making recommendations on agency and consultants' reports, and by providing survey and inventory methods and guidelines (B.C. MOE, 1976, p. U129). Essentially, throughout all of the CDG process, the proponent or new mine developer had to bear most of the responsibility for generating the information on the social and environmental aspects of the project. The government's role was to evaluate the information to ensure that significant long-range risks—in terms of economic stability, long-term environmental effects, and the effects of negative social changes on quality of life—were considered.

Other new approaches to planning were developed. One attempt at a new and experimental approach to planning was the introduction and definition of Integrated Management Units (IMU). This was to be a regionally based effort in joint-plan resource management for a designated area in
terms of multiple use. Another approach used a series of regional studies with the "South East Coal Project" an example of such a study program. Here, there were two objectives: the first was to examine how much coal development, at what location, timing, and environmental and social impacts would or should occur in the Elk and Flathead river valleys. The first objective resulted in a report which was presented to ELUC and to the Coal Committee of the Regional District of East Kootenay. The second objective was to define a method whereby the provincial ministries and regional and local governments and boards could manage these impacts. This question was discussed at meetings with the MOE and regional district and municipal officials (B.C. MOE, Annual Report, 1976). A second study program, the "North East Coal Study" (NECS) was conducted by a number of inter-agency sub-committees (townsite and community development, manpower, environment and land-use, transportation, economic marketing, and financial). In this example, the then Ministry of Economic Development (later Industry and Small Business Development) was made responsible for overall study coordination and was to plan independent of the ELUCS. The Cabinet Committee on Coal Development (CCCD) was established to investigate policy issues outside the ELUC decision framework. The NECS design was to use a coordinated team approach, composed of government analysts who were charged with evaluating resource development problems, and
who proceeded with the assumption that the province supported the North East Coal Development (NECD).

This marked the beginning of the "public sector planning process" (Malkinson and Wakbayashi, 1982), and these political administrative events resulted in the emergence of two very different overall planning processes related to coal development. First was the guidelines program requiring that the private developer take responsibility for generating information regarding the environmental-engineering design of the proposal, and for identifying monitoring schemes and providing mitigative measures. Project assessment came to be relatively clearly communicated in the first five years of implementation as experience was gained with the program. The second was "public sector planning" or a regional resource planning process, which involved the government as a developer in its role as provider of support facilities such as new towns, highways, power lines, railways, coal terminals, and related services. In this second process, information was generated by an extensive series of study programs conducted by government agencies and by private consultants working for various ministries. Neither this second process nor the information generated was communicated to the public until well after the studies were completed and key decisions regarding infrastructure had been taken. When asked about the environmental provisions in the tentative agreement between the
B.C. government and B.P. Canada Ltd. for development of the Sukunka deposits, Don Phillips, then Minister for Economic Development, replied: "We've studied it to death" (Vancouver Sun, 17 July 1978), but at that time little information had been released.

The 1969-1976 phase of expansion ended with the introduction of the CDG. Described as a project appraisal process, it had clearly described decision-making procedures as implementation began. Public sector planning, on the other hand, consisted of a series of regional studies and had no formalized decision-making procedure. The conduct of these public-sector planning studies created expectations that coal development would proceed in northeastern B.C. It was inferred that the building of new coal mines would occur, and that (Malkinson and Wakbayashi, 1982) there were no major constraints which would prevent the construction of coal mines in the region. It was this second little understood public planning process, and the implied expectations it created, that eventually led to a crisis for the guidelines process in 1981.


The 1976-1981 phase was characterized by an economic boom due chiefly to rapidly increasing commodity prices, most notably the quadrupling of oil prices by the Organization of Petroleum Exporting Countries (OPEC) and increasing
concern over the issue of security for domestic energy supplies. The belief that non-renewable oil and gas would not meet national or global demand led to numerous provincial, national, and international studies on the use of coal as an alternative energy source. The authors at that time (Anton, 1981; Ezra, 1978; Page, 1978; Patching, 1980; Simeons, 1978; Wilson, 1980) wrote of the urgency and importance of coal for both immediate and long-term economic growth, and numerous projections for future production and employment were made, as may be seen in Tables 1 and 2. A trend to thermal coal was identified, and Japan in particular planned conversions to coal as a fuel source for electrical generation and cement-plant kilns. The implications of this increased coal development were important in the southeast Kootenays and the northeast Peace River region. Provincially, numerous changes occurred to agencies as their participation in resource planning activities increased and became more clearly understood.

3.4.1 Accelerating regional impacts

In the southeast Kootenays, the CDG had been applied to six new mines. During this period, the Greenhills and Line Creek mines received approval-in-principle and began construction. By 1978, there were five mines operating in the area producing nearly 10 million tonnes a year, resulting in the need for several new types of planning.
Table 1
CANADIAN COAL EXPORT PROJECTIONS
(in millions of tonnes)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wocol</td>
<td>11</td>
<td>17</td>
<td>19-25</td>
<td>27-47</td>
</tr>
<tr>
<td>Coal Assn. of Canada</td>
<td>14.1</td>
<td>39.9</td>
<td>53.3</td>
<td>no est.</td>
</tr>
<tr>
<td>B.C. MISBD (Western Canada-metallurgical)</td>
<td>12.46</td>
<td>23</td>
<td>32</td>
<td>no est.</td>
</tr>
</tbody>
</table>


Table 2
B.C. COAL INDUSTRY EMPLOYMENT PROJECTIONS

<table>
<thead>
<tr>
<th>Source</th>
<th>Region</th>
<th>No. of Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.C. MISBD</td>
<td>Southeast (Crowsnest) Coalfield</td>
<td>5655</td>
</tr>
<tr>
<td></td>
<td>Northeast (Peace River) Coalfield</td>
<td>9040+</td>
</tr>
<tr>
<td></td>
<td>Central Coalfields</td>
<td>1760+</td>
</tr>
<tr>
<td></td>
<td>The Coast (Vancouver Island)</td>
<td>210</td>
</tr>
<tr>
<td>Major Projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Force*</td>
<td>Line Creek Coal</td>
<td>1500</td>
</tr>
</tbody>
</table>


*NOTE: No other estimates were provided to substantiate this report's claim that "direct or indirect labour demands from major projects can reduce unemployment, provide more satisfying jobs and increase participation by Canadians" (Carr and Blair, 1981, p. 10).
Intensified coal-mining activity around Coleman, Alberta caused the regional Crowsnest population to increase, and an expansion of Sparwood was planned while Elkford grew to a community of 3000 people. The identified need for settlement planning came from two concerns: first, the question of probable distribution of the new population and their housing requirements as more mines were proposed and, second, the nature or effect new mine developments in the northeast region would have on the existing southeast region. The need for reclamation planning, for more research, and for examples of successful reclamation projects was increasingly expressed by administrators of the producing mines in the region, in concert with the academic community (Cherene, 1979; Lavkulich, 1983), and regional wildlife management planning became perceived as a necessity (Dick, 1979b).

In the northeast region, two types of activity escalated. Government-sponsored field studies were under way on a large scale, with major impacts directly or indirectly felt by the existing communities of Chetwynd, Dawson Creek, and Fort St. John; second, 14 coal licence leaseholders were exploring their properties. One important issue arose relative to the conduct of exploration when large areas of land were cleared and test adits for bulk sampling were dug, making it difficult to identify where exploration ended and mining began. The problem was such that the MEMPR issued
Guidelines for Coal and Mineral Exploration (B.C. MEMPR, 1977). In addition, through the activities of ministry field crews, a permanent inspection function was identified so as to ensure that companies employed environmentally protective measures in their exploration activities. The definition of company reclamation responsibilities was refined through improved techniques of monitoring the status of reclamation work (Galbraith, 1979).

In the northwest region, it was reported (B.C. Business Magazine, 1978) that prairie backers were interested in building grain elevators at Prince Rupert; thus, the viability of increased grain-handling capacity at the northern port was studied. The National Harbours Board (NHB) had a Master Plan prepared by CBA Engineering (1978) which called for a grain elevator with a capacity of nearly one quarter of a million tonnes, and a two-phase coal terminal with a capacity of 30 million tonnes a year. In 1980, the federal and provincial governments agreed to provide road access to the terminal site, but neither provincial (CDG) nor federal (EARP) project assessment guidelines were applied to the engineering planning and construction for road access or terminal sites, because the NHB, as a federal agency, was not required to use either federal or provincial project appraisal procedures (Scott, 1982, Personal communication). The design for the grain terminal was completed in 1981, and a new consortium, including Esso Minerals
Canada, Gulf Canada, and Manalta Coal, was selected to construct and operate the coal terminal. Disputes over contracts resulted in the restructuring of the consortium, and a joint-venture agreement creating Ridley Island Terminals Inc. was drawn up (Malkinson and Wakbayashi, 1982).

Infrastructure for coal transport and handling in the rest of the province through this period was undergoing further study. In 1977, a royal commission studied B.C.Rail, and among other recommendations, the commission suggested that there should be no B.C.Rail involvement in northeast coal unless the contracts paid for the necessary development. At this time, although B.C.Rail had a debt which was approximately 15 per cent of the provincial budget, the existing government position was that railways were serving regional development; thus, these recommendations were not followed. Large public investment was going to be required for C.N.R. to be able to service both northeast coal and prairie grain. In the south the C.P.R. was operating close to capacity, yet limits to expansion existed because of the geographic location of the existing lines, and because of the large capital investment required for new construction. In 1978, the Port of Robert's Bank was considered for expansion, and, in this case, federal environmental procedures (EARP) were applied. Therefore, this expansion proposal had to undergo a full set of hearings, because, although the risks of handling bulk commodities
might have appeared similar for both Ridley Island and Robert's Bank, the lower mainland location had some important specific differences. Massive dredging, for example, was required to change the depth from 4 m to 20 m, and a land base for the loading facilities had to be created through landfill, in the process of which eel-grass beds would be disturbed; thus, the NHB decided to apply the EARPP on a site-by-site basis, based on perceived needs (Ennis, 1983, Personal communication).

Academic interest in the coal boom needs was expressed; provincial support for education and research and development in coal was provided in 1980 by proposals and funding to build a Coal Research Centre at the University of British Columbia (UBC). The purpose of this facility was to conduct "use of coals" research, to foster government-industry contacts regarding interests in coal research, and to supervise the programming of coal research facilities as they involved government, the university, and industry (UBC Reports, 1980).

3.4.2 Institutional implications

The coordination and management of inter-ministerial reviews required by the CDG was the responsibility of the ELUCS, yet this next phase saw the demise of this need, and the Secretariat was disbanded in 1980. Prior to that, however, the implementation of the CDG was concurrent with
three years of innovative activity by the ELUC and ELUCS. In 1977, the RAU had been moved from the ELUCS to the MOE as the Resource Analysis Branch. This branch conducted several years of research into the projected northeast coal regional development area, including inventories of wildlife, visual, vegetation, aquatic and migratory bird resources, as well as baseline air and water quality inventories, as they related to projected coal and townsite development areas; however, the original objectives of the RAU for coordination, communication, and education were largely abandoned under the new ministerial administration.

Within the ELUCS, two units remained—the RPU conducted integrated planning in the southeast coal block and provided advice on settlement planning in Sparwood, while the SPU had two major responsibilities: it chaired the environmental land-use sub-committee reporting to the CCCD, and coordinated the CDG with recommendations going to ELUC. In 1977, the SPU also prepared the Guidelines for Linear Development (LDG) (B.C. ELUCS, 1977a), similar to CDGs in format. Meanwhile, ELUCS was concerned with broader policy issues. Generally, the Secretariat endorsed policies which emphasized specific planning processes designed to avoid resource-use conflicts. For example, in 1977, with the ELUTC and the seven Regional Resource Management Committees (RRMC), the Secretariat continued to articulate the process of regional inter-ministry consultation in resource
planning. Guidelines for RRMC were prepared which identified the structure, role, functions, membership, and general operating procedures, in relation to community, regional district, and headquarters planning (B.C. MOE, 1977).

The CCCD, on the other hand, was emphasizing the economic implications of potential developments. Its major objective was to prepare an optimum strategy for developing the coal resource of the region by maximizing net revenues from coal development—revenues minus infrastructure costs. Environmental and social impacts were only to be managed, and from the perspective of CCCD, studies were therefore designed to examine transportation alternatives by looking only at engineering and economic considerations. An econometric model was prepared to measure the benefits and costs of alternative sequences of coal production using various estimates for the market price of coal (Basham and Monier, 1981; O'Riordan, 1981). Environmental costs were to be "measured" indirectly by adjusting the location and design of the various facilities to reduce environmental damage. Considerations of flood danger and the implications of damage to wildlife migration were not seen as significant concerns. The reasons for choosing the Tumbler Ridge site were identified as lower costs to commute to the mine sites or to travel to Dawson Creek, usefulness as a transportation and tourism centre, proximity to a possible airport
location, and lower capital and operating costs for water-supply and sewage-disposal systems (Malkinson and Wakbayashi, 1982). Generally, cost and effectiveness rather than social or environmental criteria were used to decide the location of coal-related facilities. These studies and decisions were conducted independently of the stated project appraisal decision-making processes.

As the application of the project appraisal process under the CDG continued for projects outside the NEC block, the CGSC and the ELUCS received review assistance from an increasing number of agencies. These agencies also provided provincial data and reports, and helped in the design of related Stage II studies. Several agencies afforded direct services to developers and their consultants, and some found themselves increasingly called upon to be involved with the planning, assessment, and evaluation of coal-related activities; for example, in the Annual Report (B.C. MOE, 1979) it was noted that in addition to completing northeast coal regional task force reports, the department had also participated in the design of the resource management framework for the northeast region, and assisted the CGSC in review of new coal proposals. They also reviewed operational studies for Stage III coal submissions, and were involved in Robert's Bank EARP hearings, helped to prepare Guidelines for Major Developments, and were involved with a Public Works Canada economic study for Ridley Island. This
resulted in the MOE identifying a need for a coordinator to handle coal-related activities. Other ministries found their staff requirements had increased because of coal project appraisals. Most of the individuals involved in these assessments and reviews believed that the decisions for coal-related projects were to be made after CDG project appraisal and an ELUC decision; however, as Malkinson and Wakbayashi (1982) described the public sector planning process in the northeast, this was not the case.

Following the Social Credit Party's election victory in 1979, an administrative reorganization occurred which nevertheless inherited the Secretariat, whose role had been clearly defined (B.C. MOE, Annual Report, 1979) based on the ELUC mandate in the Environment and Land Use Act. At Cabinet level, ELUC was to direct policy and project studies necessary to provide the information they felt was needed for addressing land use, resource development, and environmental issues. They were to make the decisions on such issues advising all of Cabinet and obtaining their concurrence or direction. ELUC was to make recommendations to Cabinet under the ELU Act for land-use programs and project specific environmental management regulations as well as provide direction for changes. Finally, ELUC was to release information on government decisions regarding environmental, resource, and land-use matters. The role of the Secretariat was to aid these functions and, as such, the ELUCS worked
to evaluate alternatives using a comprehensive approach. Biophysical information as well as social and economic factors were to be considered in each evaluation, with the guidelines program a specific application of that philosophy. In 1979 ELUCS helped write program guidelines for metal mines (B.C. MEMPR, 1979a); the same year, guidelines for mitigation and compensation were prepared as an appendix to the benefit-cost guidelines (B.C. ELUCS, 1980). These documents outlined principles and procedures for mitigation and compensation measures designed to offset adverse environmental and social impacts associated with major project developments. While the principles appeared all inclusive to the architects within the Secretariat, it was not clear whether ELUC intended that these new guidelines should apply in coal mine appraisals. An inter-ministerial review of a natural hazards policy was also conducted by ELUCS, and was considered important for projects which were to be developed in areas vulnerable to physical damage. In addition, programs for deregulation and review of current planning processes within a number of resource ministries were conducted in an attempt to ensure that all government planning processes were compatible in their implementation (B.C. MOE, 1979). Despite, or perhaps because of, this intensive innovative phase of government bureaucratic planning within the Secretariat in 1980, the ELUCS Secretariat was dissolved (B.C. MOE, 1980a). The assessment division in
the MOE became responsible for coordinating the linear
development guidelines, while the administration of the
metal mine guidelines and later the coal development guide­
lines became the responsibility of the MEMPR.

Notwithstanding the disbanding of the Secretariat,
given the wide context in which projects were planned, a
new model for describing the planning of developments was
created and a new type of philosophy evolved. Described
as "planning by invitation" by Paget and Rabnet (1982), or
the "resource consultative process" by Crook (1982), this
process identified the need for involvement and participa­
tion. Due to the size of new coal mine and related develop­
ment projects, a wide range of inputs was necessary if true
involvement and participation were to occur. Extensive
planning by invitation or consultation required participa­
tion by many individuals working within government, both in
Victoria and in the regions, all of which meant extensive
time was needed to allow the process to evolve. This type
of planning, described as fundamentally undemocratic (Paget
and Rabnet, 1982) was based on the reality that individual
participants needed to gain experience with the process, its
techniques, and its methodologies. Much research was done
by those administering the process, not only on how to des­
cribe the baseline situation in each project, but also on
how to resolve the problems of conducting project appraisals
and a great deal of information was generated from a variety
of planning activities (B.C. MMA, 1982; Malkinson and Wakabayashi, 1982). During this period of process development, numerous private consulting firms emerged to conduct project assessments. Engineering firms conducted social impact studies; biologists and soil scientists became environmental assessors; accounting firms carried out housing studies; yet each participated in the multi-participant learning process and, as experience was gained, the preparation of project assessments improved. Meanwhile, to meet and communicate with consulting firms, government planning agencies formed biophysical and socio-economic coordinating or sub-committees, such as the EEC and SECC, to conduct the review of coal project assessments. The result of this process was that through group deliberation the time needed to complete the appraisal activities increased. After the Secretariat was disbanded in mid-1980, the staff of the MISBD alone conducted an internal process called public-sector planning and project analyses, described by Malkinson and Sivertson (1978), which restricted participants' access to the process. These MISBD analyses indicated that the viability of northeast coal development hinged on the following critical factors: market conditions, where positive net benefits were believed possible if contracts were secured at indicated prices; the availability of underground miners; and the successful application of the most modern technical underground mining methods (Malkinson and Wakbayashi, 1982).
They also stated that legal agreements were necessary between the province and the coal companies vis-à-vis the financing of support facilities. Intra- or inter-provincial coal competition was not seen as a factor which was critical to the success of the northeast project, and world economic depression was not forecast. The impacts of these decisions on other agencies were not addressed until after the decisions had been made when the Regional Impact Consultation Committee was established in 1981 to deal with likely social or community impacts. Throughout the MISBD public sector planning, social and environmental limitations were not seen as critical.

In the fall of 1980, as the prospects of coal contracts for Teck and Quintette appeared likely, the MISBD, "in order to prepare itself for the potential that this might occur," hired a firm of consulting engineers and economists to advise on alternatives for project management (Malkinson and Wakbayashi, 1982, p. 44). Ultimately, a special project group was created which reported directly to a cabinet committee charged with the responsibility for project implementation. This North East Coal Coordinating Committee (NECC) was to coordinate project planning activities and, because of its limited membership, could move effectively to achieve specific implementation objectives. The structure was seen to be efficient and cost-effective, in that functions carried out by existing
agencies, ministries, and crown corporations would not be duplicated. This structure served, however, to bypass the existing project appraisal program in terms of both its evaluative and decision-making functions.

At the time the contracts were signed in January 1981, organizational changes advanced by the MISBD and approved by Cabinet included re-establishing the CCCD, designating a Deputy Minister's Committee on Coal Development, and setting up a new project coordination office. The Cabinet at this time was committed to three goals in the northeast project: to provide the financing for certain support facilities, to implement critical-path planning for completion of services, and to conclude legal agreements with various groups involved with the development. Essentially, this was a process which proceeded in private, not open to public debate. The comprehensive agreements with coal producers, details of the planning and implementation process, the cost-benefit analysis, and the Regional Impact Consultation Committee report were not tabled until July 1982.

On 10 February 1981, an agreement for the sale of 7.7 million tonnes of northeast coal per year was signed with the Japanese Steel Co., but at that time the major companies planning to produce the first coal from the region had not completed their Stage II assessments as required by the CDG. As a result, the role of the CDG was debated, and
there was pressure to evaluate and change the process (Dick and Ringstad, 1981; Hawes and Gadsby, 1982). Those who argued that the credibility of the CDG was never seriously in question are supported in retrospect, because the companies that proceeded with development in the northeast completed their staged assessments and received an approval-in-principle. Questions of the role of the CDG program in decision-making regarding new coal projects and related developments remained, however, because if the CDGs' function were to act as a comprehensive evaluation tool prior to a decision on mine approval, that role was not clear in the northeast projects.

3.5 Effects of Recession  
After 1981

The post-1981 phase came at a time when all industrialized societies were undergoing a major transition, characterized by a long-term recessionary trend. In the case of coal mining, the decisions made in 1981 to expand coal production in northeastern B.C. were based on initial optimistic forecasts of production and employment, as shown earlier in Tables 2 and 3. It was also supported by the fact that, for the first time, Canada enjoyed a positive balance of trade in coal (Hay et al., 1982). The trend to increased use of thermal coal (Globe and Mail, 25 January 1982), Japan's strategy of multiple-sourcing to achieve security of supply, and participation in joint-venture
projects (Hay et al., 1982; Maund, 1983), spurred existing producers to change their production planning so as to emphasize their thermal reserves. B.C. Coal's Greenhills Mine, for example, planned to expand their capacity for production of thermal coal—which needed no processing and was, therefore, cheaper to mine—and start exporting in September 1982, based on the expectation of a Japanese shift from oil to coal (Globe and Mail, 25 January 1982). The development-oriented B.C. government then had an incentive to support and encourage the improvements to transportation needed to capture the opportunities provided by the Japanese market. They responded in several ways.

Rail demand was forecast to double between 1980 and 1986 (Sigurdson, 1982); in response, infrastructure in the province was upgraded for coal-related transport. A bottleneck had been identified at Robert's Bank, and an expansion, already planned and costing $127 million, was begun in order to accommodate the anticipated increase in coal sales from western Canada. New shiploading facilities were planned to be in place by July 1983, and the handling capacity would be increased to 30 million tonnes a year. It was believed that reliable production and transportation were the key elements in developing and maintaining the necessary long-term relationships with Japanese customers (Waters, 1982), and it was forecast that by 1986 the CPR main line would present the remaining difficulty because it was already at 85 per
cent of its capacity. Line improvements were needed to reduce the grade, and producers hoping to develop new mines in the region, such as Sage Creek, were warned that the CPR might not be able to handle their new production. Restructuring of Crowsnest Pass freight rates was also identified as a problem to be resolved.

Pressure rose to meet deadlines in agreements with Japanese companies to expand existing operations. As reported by Nutt (1982a), many second-generation mines were coming on stream, all producing thermal coal—Line Creek was to ship its first train-load in March 1982, Greenhills was to follow in September 1982, Fording Coal was planning a new open pit, and Byron Creek planned to expand. In a partial response, the ELUC, through the CGSC, added an interim working policy to the CDG to deal with the possibility of large environmental effects that could be created by these planned expansions. This interim procedure (B.C. MEMPR, 1981) was to be formalized when the guidelines were revised.

Another response predicted a competitive international coal marketplace which required a new strategy, that of developing efficient company marketing operations. In 1982, B.C. Coal set up a marketing arm for thermal coal, and MISBD established a trade development strategy for exports to the Pacific Rim within its IER branch (B.C. MISBD, Annual Report, 1981b).

These actions were followed by a series of factors
which combined to create a slump in coal markets, listed by Donham (1982) as being: declining industrial production created a decrease in metallurgical coal demand; energy conservation measures were successful which caused delays in the planned construction of coal-fired electricity-generating stations; world oil prices dropped which lessened the price advantage of coal as an energy source; and Poland cut its coal prices which made them more competitive than forecasters had expected. For Canadian producers, these factors resulted in serious overproduction.

3.5.1 Regional consequences of recession

In the southeast Kootenays, the optimism of 1981 had become a crisis by 1982 when depressed coal markets which caused overproduction resulted in shut-downs and layoffs. The recession spread, and other mines in western Canada experienced similar problems. Fording Coal laid off workers in late 1982 and 1983 to operate at 60 per cent capacity, and Line Creek Coal delayed production planned for early 1983; B.C. Coal and Fording Coal cut prices by $13 a tonne and shipments by 30 per cent, in their Japanese coal contracts (Murray, 1983). This gave rise to uncertainty and instability in the Crowsnest region:

The town of Sparwood is united in frustration . . . . the southeast coal fields are languishing while the government pours millions into the northeast coal project, despite dwindling markets. (Comparelli, 1983)
Despite these indicators, in the northeast and northwest, construction on the infrastructure to support the new coal developments continued into 1982 (Farrow, 1982), while problem after problem arose. A major obstacle to the timing of the projects was the harsh climate of the regions as reported in Construction Sightlines (1982), adding unexpected difficulties to an already problematic construction environment. Labour controversies in the B.C. construction industry caused delays in developing Tumbler Ridge, and electrification of the B.C. spur line caused an increase in the capital costs for a project already noted as potentially losing $56 million over 15 years (Price Waterhouse Associates, 1981). Because of this, and because in 1981 B.P. Canada was feeling competition from Teck and Dennison (Richardson, 1982), uncertainty over the timing of the new terminal, and elimination of the plan to build a line from Sukunka to Chetwynd, they halted the Sukunka project. Instead, in 1983, the Willow Creek Mine of David Minerals took over Sukunka's small Korean coal contract and obtained quick Stage II approval because they had a sales contract (Nutt, 1983).

In the northwest of B.C., construction proceeded on the coal terminal being built by Ridley Terminals Inc., with optimistic promises. Cited as possibly being "the catalyst which makes Prince Rupert a dominant port of the North Pacific Region," this facility was expected to load
7 million tonnes of coal a year by 1984 (*Ridley Terminal Reports*, 1982), and site preparation began early in 1982 with completion planned for December 1983. Capacity was initially expected to be 12 million tonnes a year, but a phased expansion was eventually to double the capacity. Dredging operations were carried out in 1982 to accommodate larger vessels by increasing the water depth and stabilizing sediments. The major benefit from this project was cited as being the "very significant employment and economic opportunities created" (ibid.) and, as a "high-technology" terminal, it was expected to employ 75 people full time. The total investment required for construction was $80 million, with a peak construction workforce of about 250 employees. Being a capital intensive low-labour project, it raised the question of the real benefits created, with the controversy including the viability of federal and provincial procurement policies as Mitsubishi Heavy Industries was awarded a contract for a stacker-reclaimer (coal-loading equipment) over a Canadian firm, because the Japanese bid was reported to be lower, their timing better, and their technology more advanced (Nutt, 1982b).

The significance of the northeast coal project was cited by Malkinson and Wakabayashi (1982) as the cooperation which was achieved between the private and public sectors in its development planning and implementation. The project, with a planned capital cost of $2.5 billion, has
continued with construction providing some activity during the recessionary period, but the project has not proceeded without criticism. Gunton (1983, Personal communication) suggested that the cost-benefit study which recommended the project was not comprehensive in its accounting of costs, and that the project would not produce the expected net benefits. Perhaps more importantly, the northeast coal development has set a pattern of decision-making which occurs wholly outside the legislative process and, therefore, away from public debate. The approach used to plan and implement the northeast coal project may be efficient and effective using the criteria highly desired by private industry; however, it may be quite inappropriate for a government when making public investment decisions.

In summary, these historical events resulted in a context which placed the CDG program in an environment plagued with unresolved concerns, and which continue to surface. The appraisal of the Quinsam Coal proposal, a more recent project, exemplifies the controversy because, like the northeast coal project, it, too, deviates from the stated procedures in the guidelines. In this case, environmental concerns of possible damage to the salmon fishery and to local water quality (Rose, 1983) sparked a precedent setting decision by ELUC when Quinsam received their Stage II approval-in-principle subject to the conduct of public hearings. In another case, concerns of environmentalists
both in the Kootenays and in neighbouring Montana, over the Sage Creek proposal, will not easily be eliminated. A decision as to which planning and project appraisal process will be applied to these cases—the CDG multi-participant consultative process or the secretive public planning process—will determine the continued existence of the present coal guidelines as a program.
Chapter 4

COAL DEVELOPMENT

Institutional Arrangements

The measure of legislation is not simply the powers contained, but the logic by which these powers are to be exercised.

- S. Rogers, B.C. Minister of the Environment (1981)

4.1 Introduction

The instruments to implement public policies are numerous. Some measures are direct, as in the legislation and accompanying regulations for coal mining; others are less direct and more flexible, including the guidelines and planning processes which affect coal development. In Canada, the institutions which administer the various policy instruments and conduct government planning are structured at several different levels. Two are formal levels arising from the Constitution--federal and provincial--but there are several less formal levels, including the divisions and branches of various departments or ministries, various committees or panels, some with membership at the cabinet-minister level, and working-level agency representatives. Implementation of public policy for coal
development has evolved as an outcome of interactions among all these levels through time. This chapter deals with the instruments for, and the administration of, public policy and planning and the ensuing problems that arose when the development of new coal mines and related developments were addressed, and describes the operating procedures of the coal development guidelines program.

4.2 Legislation, Regulations, and Administration for Coal Development

Legislation is a direct instrument of public policy which comprises statutes holding the force of law. Regulations, on the other hand, are more loosely defined, and they may include the imposition of constraints backed by government authority that are intended to modify the behaviour of individuals and firms in the private sector (Canada, Economic Council of Canada, 1979). This broad definition of legislation and regulation is necessary because the tools for carrying out public policy and implementing public plans include licences, leases, permits, certificates, and approvals. The procedures are varied, scattered, and extensive.

A review of the existing literature on the legislation, regulations, and administration pertaining to coal use in B.C. indicated that the field was largely inaccurate and incomplete because of continual changes. McGee's (1973)
review was found to be substantially out of date, and other compendia focussed only on legislation pertinent to certain issues in coal mining. For example, Dick and Thirgood (1975) examined reclamation legislation and Hogg (1972) reviewed mining exploration controls. Gibbons (1980), while suggesting that he provided a complete overview, did not accurately present the B.C. situation—for instance, the Environment and Land Use Act was not included in his survey. The "Summary of Statutory Requirements" and the "Provincial Government Agency Contracts," and Appendices I and III in the Guidelines for Coal Development (B.C. ELUC, 1976) was now no longer applicable, and the legislative summary (B.C. ELUCS, 1976) is out of date. The brochure (B.C. MISBD, 1981c) claiming to familiarize members of the business community with government institutions and policies on environmental management, cited only the Pollution Control Act, Pesticides Control Act, Environment and Land Use Act, and the Health Act as relevant B.C. legislation for environmental management. The most complete summary has been provided in Crook's (1982a) draft appendix, "Institutional Framework for Resource Development." Although this document was written as a supplement to aid resource planning in the northeast region of the province, it lacked the organizational and administrative structures used in planning northeast coal, and failed to mention several federal agencies. A more complete survey is presented in Appendix H which
shows the organization of key provincial ministries, and Appendix I which contains the relevant federal legislation, regulations and guidelines, and the type of control agreements required of coal companies.

4.2.1 Ministry of Energy, Mines and Petroleum Resources

The mandate of the ministry is to develop and manage the energy policy of the province, to manage provincial policies for mineral and petroleum resource development, and to implement sound conservation and environmental measures for these industries. (B.C. MEMPR, 1979b, p. 39)

Within the MEMPR, the Mineral Resources Division was the administrative body responsible for obtaining industry compliance with mining legislation, as shown in Figure 5, and administering the Mines Act and the Coal Act. The Coal Act provided the legislative foundation for project appraisals, as it required companies to make submissions according to:

... a plan of operations showing the exploration, development, and production intended to be carried out in the location during the term of the lease, supported by such data, feasibility studies, and other information as the Minister may, in accordance with the regulations, require for the purpose of evaluating the application. (B.C., 1974, p. 9)

It then provided direction for government decisions regarding the proposal:

... where the Minister is satisfied that the plan of operation filed ... provides for

(i) the safe and efficient exploration, development, and production of coal on the location; and
Figure 5 B.C. Ministry of Energy, Mines and Petroleum Resources
(ii) the optimum recovery of coal resulting from production on the location, with minimum of environmental effect, the Lieutenant-Governor in Council . . . shall issue a lease.
(B.C., 1974, p. 9)

For coal resources, this Division maintained the tenure records for coal licences and leases. The responsibility for regulations governing extraction of coal, for worker and public safety at the site, and for reclamation approval for lands disturbed by coal mining, was held by the Inspection and Engineering Branch. This branch conducted regional field inspections to check mines for safety of operations as well as for the completion of reclamation work. The Geological Branch carried out geoscientific surveys, studies, and compilations, maintaining a provincial data system on coal reserves. The Mineral Economic Branch (renamed the Policy and Evaluation Branch) conducted analyses for the government for economic conditions, land use, and taxation factors relating to the coal industry. This branch also provided economic expertise for coal policy and planning, economic analyses for coal marketing, financial and fiscal evaluations of coal projects, government programs, and statistics on coal production, sales, and value. The administration of the coal development guidelines moved from the Inspection and Engineering Branch to the Policy and Evaluation Branch in March 1983.

Because coal developments create impacts and concerns among many government agencies, inter-agency
consultative procedures evolved, each with representation from different ministries and each at a different working level of government. A parallel or duplication in some organizational structures and functions appeared when the organization and function of these various committees was examined. A formal procedure operated for most coal projects in the province; special, yet parallel, sets of procedures and structures operated in the planning and evaluation of the North East Coal Development (NECD) project. It is noteworthy that the Minister of this agency did not chair any of the senior, decision-making, coal committees, and, thus, in effect the ministry's responsibility lay only with the technical appraisal of coal mine development and reclamation planning.

MEMPR had cabinet-level representation on two significant inter-agency decision-making committees. The ELUC legislatively mandated by the *ELU Act* and chaired by MOE, functioned to grant approval in principle to coal mines after they had completed Stage II of the CDG project appraisal procedures, when they would be granted permission to begin construction. This formal decision-making procedure was also to be followed for other coal-related developments -- railways, townsites, power lines, and roads. The CCCD, without formal legislative or regulatory mandate, and chaired by MISBD, was a parallel group that met to coordinate and decide upon developments in the NECD project. The
MEMPR deputy minister also sat on two inter-agency committees responsible for reviewing coal and related developments. The ELUTC was formally structured to review the comments, terms, and conditions negotiated by the CGSC and the coal companies, and make submissions to ELUC. The ELUTC and the NEC Deputy Minister's Committee had a parallel structure yet functioned differently. These committees were chaired by the MOE and MISBD deputy ministers, respectively.

At the working level, the most significant inter-agency committee for coal development was the Coal Guidelines Steering Committee (CGSC), which coordinated the guidelines process. It was expected to be the "primary government contact for a coal company" (Crook, 1981, Personal communication). The CGSC was responsible for providing overall technical-level direction to coal companies, approving Stage I submissions, and making recommendations to ELUC on terms and conditions for approval after submission of Stage II. This committee was formerly jointly chaired by a member of the ELU Secretariat and a representative of MEMPR, but after 1980 the chair was occupied by the Senior Inspector of Mines alone, and the position took the title "Manager, Project Evaluation" in 1983.

Appendix J shows the inter-agency committees with responsibilities related to coal development. Two inter-agency standing sub-committees reported to the CGSC. One was the Socio-Economic Coordinating Committee (SECC), which
provided technical advice to the CGSC and coal companies, and coordinated the socio-economic reviews of Stage I and II reports. The SECC was chaired by MMA, and Crook summarized its functions:

- solicit, collect, summarize and integrate the review comments of those provincial agencies which are concerned with the socio-economic impacts of coal mines;
- consider the socio-economic aspects of mining proposals, including project-related impacts and impact management;
- advise the CGSC on socio-economic considerations related to projects;
- recommend terms of reference for studies to the CGSC; and interpret provincial socio-economic policies to companies. (1982, Personal communication)

The second, the Economic Evaluation Committee (EEC), also provided technical advice to the CGSC and coal companies, and conducted cost-benefit analyses where major government investment could occur, and as part of its functions, according to Crook:

- advises companies of the cost and revenue data which are required to undertake its benefit/cost evaluations; and
- advises the CGSC of the overall benefit/cost status of projects. (ibid.)

The EEC was chaired by a member of the Policy and Evaluation Branch of the MEMPR, whose analyses were handled in a confidential manner and were not normally available for public scrutiny.

The NECD had an organizational structure parallel to the CGSC and its sub-committees, where the NECD was administered by the NECCC. Unlike the CGSC, where
membership was drawn from the working-level biophysical agencies, the NECCC consisted of major developers, both public and private, who were involved in NECD projects. One sub-committee, the NEC Regional Impact Consultation Committee, paralleled the SECC. This committee was concerned with socio-economic impact and management at the regional level in a working-group format coordinated by MMA (see Figure 6). The parallel to the EEC guidelines was a team of economic policy advisors who conducted cost-benefit analyses for the NECD project (B.C. MISBD, 1982c).

Another inter-agency committee associated with coal mining was the Advisory Committee on Reclamation (ACR), mandated by Section 9 of the Mines Act, and chaired by the Chief Inspector of Mines of MEMPR. The ACR reviewed and recommended approval of reclamation programs. A regional counterpart, the Minesite Advisory Committee (MAC) or the Regional Advisory Committee on Reclamation, under the authority of Section 8 of the Mines Act, had responsibility for recommending approval of coal exploration and development programs in relation to reclamation and environmental impacts, subject to referral to the ACR in Victoria. This regional level approach was thought to apply equally to the mines in the southeast and the Peace River coal blocks. In practice, however, the decentralized attempts of MAC for direct interaction with coal companies did not function.
Figure 6  B.C. North East Coal Development Organization Structure
Figure 6  B.C. North East Coal Development Organization Structure
4.2.2 Ministry of Environment

The Ministry of Environment provides the province with tools for carrying out the commitment to preserve British Columbia's unique natural heritage. The structure of the ministry reflects both the diversity and the interrelatedness of all elements that make up the environment, as well as the need for careful planning, management and environmental services to meet varied regional requirements that extend from the Pacific to the Arctic watershed. (B.C. MOE, 1980b, p. 2)

This passage reflects the problem as well as the promise of the MOE. Because of the size of the province, its biophysical diversity and the attempts at a comprehensive rationale, MOE interactions with coal development are difficult to describe. There appeared to be duplication of divisional responsibilities, and an overlap between centralized and regionalized environment assessment and management functions. An examination of the ministry's legislation indicates that it had little legislative authority to affect decisions regarding coal development and operations, except at cabinet and deputy-minister level. Most working-level MOE staff effort was therefore directed toward non-legislated, ad hoc, planning and assessment techniques to preserve environmental values. To address the many environmental concerns, extensive and time-consuming involvement in the review of developer plans was conducted. Most MOE concerns regarding coal development, both in the regional districts and in Victoria, could be addressed only through the CDG project appraisal process. The MOE had five main divisions as shown in Figure 7. Branches of the Assessment and
The main objective of the Ministry of Environment is to make sure that people, fish and wildlife have a good environment in which to live, work and play in the province of British Columbia.

In carrying out this mandate the Ministry must maintain a balance between the need to safeguard the quality of air, water, land, flora and fauna and the social and economic needs of people.

To better meet this responsibility the Ministry of Environment is presently undergoing a major reorganization that is designed to introduce a common planning and management system for all ministry programs. This will involve rewriting legislation, realigning programs and reorganizing much of the decision making process. This organizational chart reflects the Ministry's structure as of July 1983.

Figure 7 B.C. Ministry of Environment
Figure 7  B.C. Ministry of Environment
Planning Division, the Environmental Management Division, and the Regional Operations Division had responsibilities regarding coal and related developments through the CDG review of new proposals.

Coal operations were monitored by the Environmental Management Division, which administered the former *Pollution Control Act*, the *Water Act*, and the *Wildlife Act*. The Waste Management Branch was responsible for the daily administration of pollution control permits and approvals, and the Water Management Branch was responsible for the allocation and management of water resources by issuing licences for water use and providing consultation on flooding, erosion, and protection-design strategies. Bankes and Thompson (1980) suggested that the potential for monitoring as a scientific evaluative technique to support the objectives of project assessment could be found in these statutory tools. This potential has not been realized, however, "because implementations of monitoring provisions are not well understood, monitoring does not continue after project shutdown, and public participation is non-existent" (ibid., p. 12).

Proposed new legislation was expected to help MOE improve efficiency and consistency. The *Waste Management Act* and the *Wildlife Management Act* were planned to integrate with the approach of the *Environment Management Act*. This latter act consolidated MOE management responsibilities
by allowing for the "creation of coordinated systems for environmental study and decisions, so that both the public and other ministries of government could expect efficient and consistent consideration of their concerns" (B.C., MOE, 1981a, p. 2). Wider powers were sought so that assessment activities would be seen as only one part of an overall planning process. When this approach was considered with reference to coal development, the MOE efforts at consolidation and planning met with little success. The system for environmental studies and decision-making, later administered in part by both MEMPR and MISBD, was not rationalized or within MOE's control. In current practice, the coordination required to assess environmental impacts occurs through inter-agency committees.

The ELUC and ELUTC, chaired, respectively, by the cabinet minister and deputy minister of MOE, were officially responsible for resolving resource conflicts through their mandate in the *Environment and Land Use Act*. This act provided broad powers under Section 3(b) for ELUC to:

Ensure that all aspects of preservation and maintenance of the natural environment are fully considered in the administration of land use and resource development commensurate with a maximum beneficial land use, and minimize and prevent waste of resources, and despoliation of the environment occasioned thereby. (B.C., 1971).

and further, under Section 6:

... notwithstanding any other Act or regulation ... no Minister, department of Government, or agent of the Crown specified in ... [an] order shall exercise any
power granted under any other Act or regulation except in accordance with the order. (B.C., 1971)

Later decisions of ELUC were limited to rejection or approval-in-principle of coal-proponent staged documents based on recommendations from the CGSC and the ELUTC. These decisions were site- and project-specific. They did not attempt to resolve land-use conflicts or the cumulative impacts that might be caused by several mines operating in one region; thus, these concerns were left to be assessed and planned for by the Assessment and Planning Division of the MOE, although this division had no clear access to decision-making procedures.

To address cumulative impacts, the Planning Branch prepared strategic plans to provide consistent regional environmental policies into which new developments should fit. The Elk/Flathead Planning Unit in the southeast coal block was the group and region for which the first strategic plans were developed. The strategic planning program "arose directly from the CDG process" (B.C. MOE, 1981b, p. 22) with an objective to develop a comprehensive environmental management plan and program to measure impacts associated with the five existing and proposed coal projects in the region. The plan would address fish, wildlife, recreation, water allocation, and water and air quality through the identification of management objectives for each aspect. Strategic planning was not coordinated through
inter-agency committees, and coal companies and other government agencies had no direct input into the setting of the regional management objectives. A similar process was initiated to develop a comprehensive impact management program for the Peace River Planning Unit. The inventory on which these plans were based came from the Aquatic, Terrestrial, and Air Studies Branches of this division.

MOE was responsible for the inter-agency Agricultural Land Commission (ALC), which had the task of acting as a land zoning authority. With reference to new coal developments, ALC regulated non-farming use of land in Agricultural Land Reserves (ALR), and conditional-use permits were arranged through the ALC for mine sites within ALR. ALC permission was also necessary to cross land reserves with rights-of-way. Through the Soil Conservation Act, ALC had the authority to regulate the control of sedimentation from mining activities.

4.2.3 Ministry of Industry and Small Business Development

The Economic Analysis and Research Bureau of this ministry had the most extensive involvement with coal and related developments in B.C., as may be seen in Figure 8.

The objective of the Economic Analysis and Research Bureau is to provide the Deputy Minister, Minister and Cabinet with factual economic data required to develop government policy. The bureau also provides policy assessments and development alternatives relating to the industrial, trade and socio-economic activities in
Figure 8 B.C. Ministry of Industry and Small Business Development
the province. The bureau evaluates major project proposals, and provides the planning and coordinating functions necessary to their realization. The bureau has the responsibility for developing and coordinating the province's industrial policy and trade development strategies. (B.C. MISBD, 1981b, p. 27)

The Regional Resource Analysis Branch of this bureau had concentrated its activities on the NECD project, but had also undertaken analyses with respect to coal developments in the southeast and Hat Creek. The branch's activities included: (1) coordination of the critical path of the NECD project, (2) development of rail-costing computer simulation models, (3) Tumbler Ridge townsite and social impact analyses, (4) evaluation of provincial infrastructure investments, (5) specification of detailed manpower requirements for NECD, and (6) facilitation of negotiations between governments, Crown corporations, and private companies.

On-going coal market analysis and research was also carried out by this bureau. In 1980, it participated in a joint federal-provincial world thermal coal demand study. Information and educational functions with regard to these analyses were carried out through briefings, research papers and publications, and a grant to Canada West Foundation for a coal-studies conference. Policy and project economic analyses were conducted for transportation issues, and grain- and coal-port development—Ridley Island and Robert's Bank. There was no legislation or regulatory mandate for the bureau's activities except the act which
designated the ministry. This bureau replaced, in analytic responsibility, the ELUC Secretariat, and overlapped in many respects the responsibilities of the Policy and Evaluation Branch of MEMPR.

4.2.4 Ministry of Lands, Parks and Housing

The Ministry of Lands, Parks and Housing (MLPH) administered a planning program for unalienated Crown lands. The MLPH strategy had been to establish a logical framework within which the ministry could exercise its planning mandate. Planning activities were carried out by the Lands and Housing Regional Operations Division, and the Program and Management Services Division with support from the Land Programs Branch of the Lands Division. The planning functions applied to land where no specific tenure existed on Crown land, or where the land was under tenure granted pursuant to the Land Act. The legislation defined regulatory procedures for acquiring public lands, and defined the rights accompanying the transfer. When surface rights were given to holders of coal licences in connection with exploration activities, MLPH management did not apply. This ministry, due to the complexity of Crown land jurisdiction, had many protocol agreements with other government agencies. Coal companies were required to participate in the MLPH referral processes if they wished to obtain licences of occupation or rights-of-way, or easements on Crown land.
The Ministry of MLPH was represented on ELUC, with representation on the CGSC to bring concerns to the notice of the coal developer, until in 1983 when it was combined with MOE.

4.2.5 Ministry of Forests

The government, through the Ministry of Forests, sets goals, determines policy, develops programs and measures performance. The private sector, which includes firms in the forest and forestry industries and firms which perform services and supply goods for the Ministry, carries out contracted operations and activities financed by the government. (B.C. MOF, 1982, p. 7)

The Ministry of Forests (MOF) had cabinet level representation on the ELUC, and operated with three main program functions—timber management, range management, and recreation management, as specified by the Forest Act. Regulations for coal and related developments were administered by the Forest Service. To coordinate the non-forest use of land in provincial forests, protocol agreements existed with the MLPH and the Forest Service, and decisions were largely decentralized and handled at the district level. A system of zoning was planned with two objectives: (1) to divide land according to environmental sensitivity and (2) to facilitate appropriate management guidelines. The felling of trees and use of timber in mining operations were also covered in the Forest Act, and stumpage was payable on timber licences, although free-use permits were available where the timber was used in mining operations,
with special approval for surface use where a provincial forest was designated. A representative from ministry headquarters, Strategic Studies Branch, participated in the CGSC deliberations, but many district forest concerns, particularly those related to coal exploration, were handled outside CGSC coordination.

4.2.6 Ministry of Provincial Secretary and Government Services

Within the diverse Ministry of Provincial Secretary and Government Services (MPS&GS), the Heritage Conservation Branch (HCB) and the Capital Assistance Program were concerned with and participated in a review of new coal and related developments. The Resource Management Division administered the Heritage Resource Assessment and Review Process (HRARP) which was modelled after the CDG in its two-staged report and review format.

... [there is] growing recognition by both the provincial government and private industry of their responsibility to consider heritage resource values in land-use planning and development, along with technical, environmental and socio-economic considerations ... .

(B.C. MPS & GS, 1981, p. 1)

The guidelines, mandated by the Heritage Conservation Act, were coordinated by HCB representation on the CGSC. The HRARP was designed to stage decision- and data-collection steps synchronized with the CDG. Developers were required to submit a Heritage Assessment Report, and it was their responsibility to identify sites, survey the historical
records, and, in some cases, conduct field work. A permit was required to conduct an archaeological investigation for any subsurface exploration, and the HCB MPS&GS participated in the NECS through inventory activities.

The Capital Assistance Program was, through the Recreation and Sport Branch, a recreation facilities funding program. A representative of this program reviewed the CDG staged assessment reports, but there was no legislative mandate for the program—it operated by moral suasion and public pressure. Companies were asked to participate in recreational development in resource communities by assisting with capital costs, but operating costs were borne by the community. Company participation was encouraged on the grounds that good recreation facilities improved employee relations.

4.2.7 Ministry of Transportation and Highways

The Ministry of Transportation and Highways (MTH) administered the Highway Act, the Highway (Industrial) Act, and the Pipeline Act. The first two acts provided for regulated access to designated controlled-access highways, for definitions of industrial (non-forestry) roads, and for regulation of operations. The Pipeline Act governed all aspects of the construction and operation of provincial pipelines. MTH participated in the CGSC, and reviewed new
coal development proposals for ministerial concerns. Associated with the NECD were numerous projects in which this ministry acted as developer. The environmental assessment for the highway from Chetwynd to Tumbler Ridge was handled internally on an ad hoc basis, with an iterative review sponsored by the Environment-Land Use sub-committee. A complex secondary network of minor resource roads for coal exploration and development was subject to routine permitting processes, and the primary access roads to the coal mine project sites were subject to assessment and review by the CDG. The Anzac-Table-Wolverine-Quintette branch line of B.C. Rail and the 230-kilowatt power line of B.C. Hydro were assessed by formal Stage II submissions pursuant to the Linear Development Guidelines (LDG), and approval-in-principle for each development was obtained.

4.2.8 Ministry of Municipal Affairs

The mandate of this ministry is to manage and direct the development of human settlements in the province in the context of provincial objectives . . . with the focus on land use and the planning for the development of settlements in the provincial, regional and local scales in the context of larger provincial, social, economic, resource management and environmental objectives. (B.C. 1981, p. 1)

The mandate for the Ministry of Municipal Affairs (MMA) came from the British North America Act (BNA) for jurisdiction over local government institutions, property and civil rights, and all local and private matters. The
Municipal Act provided for municipalities and regional districts, and established their mandate and roles. There were two types of plans administered by MMA: Official Regional Plans and Official Settlement Plans. These were to represent jointly coordinated statements between the regional districts and the province regarding policies for the development, conservation, and management of an area's physical resources through the Official Settlement Planning Process (OSPP). Ministerial organization included the Planning Branch which was directed to coordinate the MMA project review activities, a responsibility shared with regional and headquarters staff, with increasing regional involvement.

The Policy and Research Branch was organized to review coal and related development projects from corporate, financial, and local government structure policy perspectives. This ministry was fully involved in project reviews in order to integrate development information into its operations. To carry out its mandate, MMA had been involved in several programs, for example, in settlement planning aspects of NECD's provincial plan for Tumbler Ridge, and in impact management with the local governments through the Elkford Project Committee. MMA acted as an information source for companies in a technical and advisory role. In return, the developer was required to provide two types of information; one was the developer's policies on settlement
choices, housing, and community involvement, and the second, factual information on labour force, population, housing land consumption, municipal services, and municipal finance. MMA provided a list of information required of developers for use in project appraisals. This information was used by MMA as the basis of service delivery decisions for most social service agencies and manpower figures were required to establish labour force planning projections. With reference to the SECC, MMA coordinated this sub-committee and communicated social agency information and planning needs to the developer. MMA was also concerned with impacts due to increased development of communities on the local environment. In the case of the NECD, MMA chaired the Townsite Community Development Sub-committee and the NEC Regional Impact Coordinating Committee (NECRICC).

4.2.9 Ministry of Labour

With reference to coal and related developments, the Program Services Branch of the Ministry of Labour (MOL) conducted an inventory of major projects in B.C. in 1979 and 1980, and developed estimates of manpower requirements. This branch also provided research assistance for the inter-ministerial reviews of major coal projects through participation in the SECC. Within the MOL, program services provided advice and information to senior MOL officials and indirect support to other ministry programs. Through the
former *Mining Regulation Act*, worker safety provisions at the mine site were implemented and the ministry's Manpower Advisory Services operated to assist advance planning for manpower expansion and contraction. To make manpower forecasts, this group cooperated with the federal Manpower Consultative Services of Employment and Immigration Canada, to examine and analyse the employment and economic potential of a region. MOL worked toward manpower planning, training, and upgrading of worker skills, and coordinated the Manpower Planning Sub-committee for the NECS.

4.2.10 Ministries of Education and Health

The Ministry of Education (MED) was highly regionalized because local school boards levied taxes under the B.C. *School Act* to provide educational facilities and programs. The college boards, on the other hand, had no tax-levying authority in the B.C. *College and Institutions Act*. Most MED activities, therefore, were administered regionally, with the responsibility for initiating activities given to local authorities. With new coal developments—in the southeast Kootenays, for example—the MED headquarters' role was mainly consultative. Headquarters did not participate in the CGSC or the SECC review of coal and related projects, but in the NECD, MED did participate with senior regional personnel in the NEC RICC to deal with the perceived problems of an expanding community in a proactive manner. MED
involvement in NEC was precipitated by several problems, two of which were planning oriented. Program planning at the senior secondary and college level was needed to provide an opportunity for local individuals to benefit from development in the area. Planning was needed for use of school facilities in the existing communities and in Tumbler Ridge as sites for cultural activities; and there were also inter-jurisdictional problems to be resolved between ministries regarding costs for roads and services to the new schools.

The overall concern of the Ministry of Health (MOH) was the provision of services in response to new or expanding communities. In addition, provisions of the Health Act regulated the conditions of sewage disposal systems, which were of specific concern to this ministry for onsite sewage and waste disposal, as well as increased sewage disposal in mining communities. Overlaps in jurisdiction regarding the cost of providing for these increased services existed between MOH and MMA. Inter-jurisdictional concerns also developed between MOH and MED over provisions for special education spending. Because coal development caused multiple impacts on a community, the MOH participated in the NEC RICC in an attempt to alleviate the uncertainty and frustration for social agency administrators,
4.2.11 Federal Department of Energy, Mines and Resources

The federal Department of Energy, Mines and Resources (EMR) was not directly involved or active in coal assessment in B.C. The Geological Survey of Canada had a general mapping role, and the ministry's Coal Division office, located in Calgary, Alberta, handled coal-related information for Western Canada.

4.2.12 Environment Canada, and Department of Fisheries and Oceans

The federal Department of Environment (DOE) was involved in B.C. coal development as adviser to the CGSC. Because of the many agencies within the department—Atmospheric Environment Service, Canadian Wildlife Service, Environmental Protection Service, Lands Directorate, Inland Waters Directorate, and Parks Canada—a loosely organized internal departmental committee operated. The Regional Screening and Coordinating Committee (RSCC) coordinated all document review activities for the DOE and reviewed any projects referred to it by the various provincial guidelines procedures. These documents usually entered the RSCC review through the Environmental Protection Service, and when the issues were substantive as identified by an initial analysis, and the responsibilities were federal, a task force was struck to examine the technical issues in depth.
The documents for the Quinsam and Sage Creek (Q & SC) projects, for example, were analysed in this manner. Where concerns were extra-departmental from the Department of Fisheries and Oceans (DFO) or Indian Affairs, further analysis was conducted and a coordinated federal response was prepared with that department.

4.3 Operating Procedures of the CDG Program

A number of procedural changes have occurred since the guidelines were drafted in 1976, and, later, operating procedures evolved over time with case-specific experiences, but with no standard procedures, and substantial variation among cases. Nevertheless, the following summary provides a general understanding of the sequence of procedures and identifies two distinct aspects to project appraisal as practised in B.C.—the assessment and the review.

4.3.1 Assessment procedures

A coal company entered the CDG program, as shown in Figure 9, with the submission of a prospectus which identified the company's exploration program, and contained an initial conceptual mine plan, planning schedule, and a list of potential environmental and socio-economic issues.

(Existing mines planning an expansion entered the program with an expansion proposal.) If there was no feedback from
Figure 9 Coal Guidelines Review Process
government through the CGSC, field studies could be started if the company felt the project appeared feasible.

The field studies conducted for a preliminary assessment were reported in the Stage I document, as were a number of reconnaissance-level baseline inventories. Alternatives were suggested, using the preliminary conceptualized mine plan, and the report was presented to the CGSC, most often in draft form, and if the document met the spirit and intent of the CDG it was accepted for full review. This development of a Stage I document was often accompanied by numerous meetings, letters, and personal conversations between agencies directly involved in the region of potential development. Through this iterative procedure, data gaps were identified for inclusion in the final Stage I document. Documents for projects that were not rejected proceeded to full review, and a period of iteration followed, with the company, CGSC, sub-committees, and other agencies outlining appropriate Stage II study programs. The Stage II studies were conducted with government agency advice and interaction, which was encouraged by the CGSC. Separate financial information was submitted to the CGSC for consideration of economic viability, and in some cases a cost-benefit analysis was prepared by a government agency as required. The Stage II document presented a record of the resolution of problems and contained a detailed mine plan with impact assessments, possible
draft permit applications, and impact management proposals. If the Stage II document was not accepted or given approval in principle, more study was likely conducted to fill the gaps, or the company may have decided not to proceed. A successful approval-in-principle was usually understood to mean completion of the CDG program. Stage III allowed for designation of permit and licence conditions, completion of any data deficiencies from Stage II, and finalizing of permits and impact management plans. Implementation of the monitoring program was part of Stage IV and was discussed directly with the permitting agency.

4.3.2 Review procedures

The proponent's prospectus was not formally reviewed but the document was circulated among the agencies as shown in Figure 10. Different agencies responded with varying procedures: some took note, while others proceeded to flag the region of the proposed project, formally noting its possible interaction with other activities in the region. The time lapse between prospectus receipt and Stage I submission varied and it was left to the proponent to initiate further interaction. The Stage I review process may first have involved the review agent in project appraisal when there was a CGSC request to review the document; alternatively, the agent may have had many contacts with the proponent through his initial project planning and assessment
Financial Information
Review Compendia
Staged Reports
(Environmental and Social Impact Studies)

Coal Company

CGSC (MEMPR)

MTH
BSC
MISBD
MOE
MAG
MOE
MAC
ACR
MISBD
WA MB
MAC

Other branches

ACR Advisory Comm. on Reclamation
BSC Biophysical Sub-Committee
CGSC Coal Guidelines Steering Comm.
EEC Economic Evaluation Comm.
F&W Fish & Wildlife
MAC Minesite Advisory Committee
MAG Ministry of Attorney General
MED Ministry of Education
MEMPR Ministry of Energy, Mines & Petroleum Resources
MOH Ministry of Health
MHR Ministry of Human Resources
MISBD Ministry of Industry & Small Business Development
MOL Ministry of Labour
MMA Ministry of Municipal Affairs
MMA Ministry of Transportation & Highways
MEMPR Ministry of Energy, Mines & Petroleum Resources
MISBD Ministry of Industry & Small Business Development
MOE Ministry of Environment
MFS&GS Ministry of Provincial Secretary & Government Services
MTH Ministry of Transportation & Highways
RSCC Resource Coordinating Comm.
SECC Socio-Economic Coordinating Committee
WaMB Water Management Branch
WMB Waste Management Branch

Key: _______ public documents, available after mine approval
------- confidential documents

Figure 10 B.C. Government Review Process
activities. The review agent participated in a sub-committee meeting or passed his comments on to an agency coordinator where they were brought together into a common agency position. The request for review and the proponent documents were delivered to the review agent with a covering letter from the chairman or secretary of the CGSC identifying the deadline for comment submissions. The review comments were received by the CGSC administration in verbal and written form whereupon they were coordinated by the secretary of the CGSC, at which time a draft compendium of comments was prepared and circulated to review agents for additional comments before it was returned to the company.

The period prior to receipt of the Stage II document was characterized by complex interactions and negotiations specific to the case. Pre-screening of the draft document ensured that any glaring omissions or violations of the "spirit and intent" of the CDG were eliminated. A large number of copies of the formal document were required and, because review agents found an appraisal document review added to their existing work responsibilities, and with other competing priorities, the documents were often reviewed in an individualized manner for agency-specific or technical criteria. Stage II comments were received through sub-committee coordination and then by the secretary of the CGSC, and a compendium of comments was drafted, edited, circulated, and returned to the company. Results of
the separate financial evaluation were communicated to the CGSC in the form of a statement of the EEC findings of project viability, with the company advised by telephone of any outstanding problems. The CGSC then met to define terms and conditions for recommendations to ELUTC and ELUC. When recommendations regarding approval were prepared by the CGSC, they were submitted to the ELUTC where the project was considered in the context of other policy decisions. These recommendations were passed on to ELUC for review and a decision, and then the ELUC decision on approval-in-principle was communicated by the chairman of ELUC to the company, with any terms or conditions appended.
Chapter 5

PROGRAM ACTIONS

Line Creek, Greenhills, and Sukunka

_Informed discussion will pave the way to more judicious approaches to technology._

- Indira Ghandi, New Delhi (1982)

5.1 Introduction

In an effort to judge the actions of the CDG program in adequately meeting its objectives of coordinating a project appraisal, three cases of coal mine development planning were systematically examined. The cases were chosen on the basis of having completed the CDG program by 1981. This achievement was marked by the project having received approval-in-principle after Stage II review. The time deadline was chosen so that case documents would be available for analysis. Five mines met the criteria—in the southeast, Line Creek, Elk River, Hosmer-Wheeler, and Greenhills; and in the Peace River coal block, Sukunka. Of these five, only two had proceeded to construction by 1983, Line Creek and Greenhills. Sukunka was chosen in order to provide a more representative geographic element.

One of the accepted tenets of a society which
believes it is a pluralistic democracy is that information should generally be available to all. There is an assumed right to be informed before, during, and after decisions are made. The formal documentation required for and of the CDG program acted in part as a vehicle to facilitate information exchange, and to formalize dialogue between the proponent and government representatives of the varied public interests.

The formal documentation was characterized by three overall problems associated with program expectations—variations in review analysis, inherent conflicts within the program description, and a conflict between coal project appraisals and current practices of impact assessment. Although the purpose, timing, and type of information required of the proponent was stated in the guidelines, flexibility was applied with regard to the information expected, and there were no rigid standards. Variation in the extent of the review analysis and commentary appeared among the reviewers who had different experiences with coal development, public administration, and the range of site-specific characteristics and issues which accompanied each proposal. While this made the program more adaptable, conflicting expectations for content had to be taken into account when evaluating the documents.

The second problem in expectations came from paradoxes within the CDG description. The CDG, in an effort to
engender total assessment, attempted to include all issues in a proponent's documentation:

Stage I should identify the major economic, environmental and social impact of the proposed development on the region in general . . . . Existing natural, social and economic conditions within the zone of influence should be described. (B.C. ELUC, 1976, p. 6)

The guidelines were clearly designed to be broad in scope and were to employ several techniques to assess the consequences of change. To constrain somewhat the implied comprehensiveness of the program, the following advice was provided which suggested that assessment should be considered within a monetary context:

As a general rule the Province is seeking a proposal from developers wherein economic, social and environmental concerns are assessed, planned for and "traded-off," to produce a balance that maximizes net social well-being in the region of development and to the Province. Thus, environmental impacts at a particular site might not necessarily be minimized if costs of such actions far outweigh the value of foregone resources. (B.C. ELUC, 1976, p. 8)

This action would reduce the CDG's attempt at total assessment to "myth not reality" (Cope and Hills, 1979). It is not clear how regional interests were to be balanced against provincial interests, as there were no regional economic measures or regional jurisdictions to ensure that a balance was achieved. In addition, the principle that costs of mitigation and compensation should not exceed the value of the resource denied the concept of internalizing externalities. Both principles acted as limitations to the concept of a totally comprehensive assessment. One outcome, a
conflict in document expectation, arose from trying to identify which impacts should be assessed and in what manner they should be reported.

For guidance to resolve some of these problems, the theoretical literature (Burchell and Listokin, 1975; Burchell, Listokin, Sinha, and Rosen, 1978; Greenhall, 1977; Kefalas and Pittenger, 1975) of project appraisal identified the range of impacts and the timing and methods of impact prediction that should be considered in planning a proposed development. For coal-related development projects, other jurisdictions had assessment check-lists and guidelines for review. Alberta's Energy Resources Conservation Board (1978), Mountain West Research (1979), and Wayman and Gena-sci (1980) have supplied detailed information requirements specific to coal mines. Other publications are also available concerned with the evaluation of the review process (Butz and Senew, 1974; Friedmann, 1973b; Soper, 1974), and together they create the third problem in document expectation, where participants familiar with another jurisdiction, or with other appraisal options, may have differing expectations for the appraisal documentation.

5.2 Case Studies: Project Evaluation

A summary of the overall timing of proponent submissions and of the government response is shown in Figure 11
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**Figure 11 Line Creek, Greenhills, and Sukunka: A Chronology**

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with documents summarized and coded in Appendix B.* The sources for the following discussion included information about both formal and informal communications provided by R. Crook, the secretary of CGSC, through file checks in March and July 1982. Examination of the projects' case histories served to reveal the flexible application of the program as well as indicating how procedures have evolved. Even so, the Line Creek and Greenhills coal projects were considered to be atypical of the guidelines process (Crook, 1982, Personal communication).

5.2.1 Line Creek

The Line Creek mine, formerly owned by Crows Nest Industries (CNI), then owned and operated by Crows Nest Resources Calgary (CNRC), was a subsidiary of Shell Canada Ltd. Exploration began in 1968 in a joint venture with Mitsui Co. on 32 coal licences in the Elk Valley in the southeast Kootenays of B.C. (see Figure 12). Company planners, aware of pending requirements for project appraisal, requested information on the new CDG early in 1975. B.C. Research Council (BCRC) was employed as consultant to conduct preliminary studies on the biophysical baseline conditions of the study site, but because of early company

*This unorthodox method of documentation was adopted for this section only so as to avoid excess itemization in the References Cited.
Figure 12 Location of Proposed Line Creek Mine Development
and consultant pre-planning in an effort to condense the process, the "L.C. Prospectus" was submitted to the CGSC in August 1976, together with the "L.C. Stage I." Later that month, 50 copies of the Stage I document were requested from the steering committee to facilitate the government review. At that time the major concerns identified were the plant site location and possible ALR conflict.

Two months later, the "L.C. Heritage Assessment" was filed. It was noted that the state of the heritage resources in the area would require considerable mitigation. A government review was coordinated through report circulation, comment return, and draft summary circulation. After completion in November 1976, CNI was notified by the CGSC of the acceptability of their report. The "L.C. Stage I, Review" comments were directed toward the design of the Stage II studies and emphasized four areas of concern: (1) plant location, (2) mine site and access road design, (3) estimates, and (4) community expansion. This was the third Stage I report approved by the CDG program.

In early 1977, the MAC completed two reviews of the "L.C. Stage I" report following meetings with CNI and BCRC. Comments by the chairman of the MAC emphasized technical considerations and provided advice on requirements for missing information and planning, and a summary of resolved and unresolved concerns, and were transmitted to CNI through the CGSC in June 1977. CNI was advised to submit a draft
Stage II report to ensure that when the final report was circulated for review it would receive general acceptance. At this time economic information deemed necessary for a government cost-benefit analysis was requested, to be submitted in a confidential manner as a separate document and sent directly to the Minister of Mines. A draft Stage II was submitted on 5 August and it was then pre-screened and accepted for full review on 25 August. Agencies identified concerns regarding the impact on wildlife, recreational values, land-use planning, community housing options, assumptions for labour force training, and types of jobs available for females in the workforce.

The formal "L.C. Stage II" was submitted in October 1977, pre-screened, and circulated to all provincial agencies. Meetings with the MAC, BCRC, and CNI were held in mid-November. At this time, technical issues pertaining to permits were noted, and management of the elk population arose as one of the issues. In December 1977 the review was completed and "L.C. Stage II Review" was sent to CNI with a covering letter which summarized the biophysical, socio-economic, and community agency concerns. CGSC accepted the "L.C. Stage II" report as basically fulfilling the CDG program requirements, but noted additional work was required. It was suggested that this be carried out in a joint planning exercise with government resource managers. A period of 17 months elapsed from the time of submission of the
prospectus to acceptance of Stage II project appraisal.

In January 1978 a memorandum from the CSGC to CNI noted a concern over a pictograph in a limestone overhang, possibly requiring excavation. Although unrelated to this issue, for 11 months project initiative slowed from the government's perspective. In November 1979 ELUCS was notified by CGSC that CNI had not resolved the issues arising from the Stage II review; nevertheless, CGSC requested an approval-in-principle from ELUC as a statement of government support for the project. The new CNRC received notification of ELUC approval in February 1979 with several conditions: the economic information was considered inadequate, and employee training programs, community development implications, and wildlife and recreation management problems were to be resolved. Company economic data were submitted on a confidential basis, but in October 1979 the Pollution Control Board, CNRC, and ELUCS met regarding a change in mine design. CNRC prepared the "L.C. Meeting Brief" to address the identified concerns and present their position to CGSC in November; in December 1979 CGSC notified CNRC that permitting could proceed and joint company and environment management commitments were made. Because many community agency concerns had not been resolved, a housing study was requested and the "L.C. Population" study was submitted in March 1980, including the CNRC policy on company housing and a forecast of probable employee population distribution.
In light of the forecast heavy demand for coal, construction began in the spring of 1980 and CNRC announced a planned expansion of the project from 1.7 to 2.6 million tonnes a year to be produced by 1981. The CGSC noted that this required significant changes in design plan and requested more specific information. The "L.C. Expansion Brief" was filed at a meeting with the Steering Committee in September 1981, and in December 1981 CGSC notified CNRC that a new, detailed impact assessment was required to assess their expansion plans. As a result of this experience, a CGSC working procedure was adopted to deal with other mine expansions while construction continued on the expanded Line Creek design. By 1983 some thermal coal had been shipped, but full-scale production had not commenced.

5.2.2 Greenhills

The Greenhills surface mining projects, formerly owned by Kaiser Resource Ltd. (KRL), had been acquired by B.C. Coal, a subsidiary of B.C. Resources Investment Corporation (BCRIC). Exploration began in 1969 on coal holdings in the Elk Valley of the southeast Kootenays (see Figure 13). Discussions between KRL and CGSC began in April 1979 when company planning information was requested by MMA for use in their Upper Elk Valley Settlement Planning Program. Meetings were held in August 1979 between KRL, CGSC, and BCRC to present a draft prospectus of a two-phase proposal.
Figure 13 Location of Greenhills Study Area
KRL requested early consideration for approval of Phase I of their proposal, so they could take advantage of the 1980 construction season for which baseline data were already available. CGSC requested that KRL take steps to notify the public in the Kootenays of their development plans.

A prospectus, the twelfth to be received by the CGSC, was submitted in mid-August, with BCRC commissioned to conduct biophysical studies, and Currie, Coopers and Lybrand (CCL) engaged to conduct the socio-economic studies. To achieve early approval, KRL was advised that considerable detail would have to be included in the Stage I report. Certain review agents noted that this request circumvented the purpose and intent of the CDG, while other concerns arising from an informal prospectus review included observations that the prospectus lacked information on the total land area affected, and did not identify methods to control road drainage, or include groundwater and surface water monitoring plans. In addition, the early request would constrain adequate lead-time for archaeological field investigations. Reviewers also noted that prior to initiation of construction activities, only Stage II-level information would be acceptable for heritage assessments, and advised CGSC to take a cautionary approach to the company request because it threatened to invalidate the purpose of the CDG.

CGSC emphasized to KRL in late August 1979 that,
prior to approval, efforts should be made to reach Stage II level of detail in their reports. To facilitate this request, it was suggested that the CGSC review the terms of reference and table of contents for biophysical and socio-economic study program requirements. KRL presented their proposed studies to review agents in a September meeting. Concerns were identified regarding spoil-dump design, the need for geotechnical studies, potential land-use scenarios, manpower requirements, labour sourcing, and training programs. From the meeting came the recommendation that the Stage I submission be postponed until the geotechnical studies and conceptual mine plan were completed and the impacts more fully assessed. MAC requested a further meeting with KRL to deal with technical mine-planning details, without which it was felt an expedited Stage I approval-in-principle would be unlikely.

In December 1979 a meeting was held among CGSC, KRL, BCRC, and CCL at the request of KRL for exchange of information. KRL organized a corporate task force to work with their consultants to facilitate the project and manage the plans. Instead of approval-in-principle, some pre-production permitting was requested for logging of the main haul road and clearing of the mine and plant facilities area, which was approved by the CGSC. Subsequent changes in the mine plan were based on promising market prospects which appeared to make feasible a processing plant at the site in
1983, supported by the potential reserves of 50 years. It was noted that the exploration permit had accommodated work to date, but because of the pre-production request, a reclamation permit and reclamation plan were required to address pre-development disturbances.

The "Gh Stage I Environ." and "Gh Stage I Socio." reports were received by the CGSC in March 1980. The government required 150 copies for review, to be examined by agencies in Victoria as well as the regional district of East Kootenay and the municipal councils of Fernie, Sparwood, and Elkford. Copies of the report were distributed to the Fish and Wildlife Branch, Pollution Control Branch, the District Land Manager in Cranbrook, and the District Mines Inspector in Fernie. The "Gh Pre-Production" work permit report was submitted and distributed in May 1980. Government review of these documents was completed and comments were sent to KRL initially on an informal basis by July 1980. Concerns included aspects of the development program relative to the Coal Mines Regulation Act, socio-economic matters, the work camp and surface-water controls during pre-construction, groundwater and pit-dewatering, air quality control, water quality sediment control measures, regulations governing temporary water use, surface erosion, and heritage assessment design problems. An issue arose within the government reviewers regarding the format for summarizing review comments, with some review agents
feeling that their comments should be communicated verbatim to the proponent. A summarizing technique, it was felt, either neglected the reviewers' concerns or lost their intent and meaning.

The study proposal for Stage II was reviewed in May 1980. An informal relay of agency Stage II study recommendations was communicated as a strategy to expedite the 1980 study season. A draft Stage II submission was received by CGSC in December 1980, which included the three-volume "Gh Stage II Environ." and a one-volume "Gh Stage II Socio."

The CGSC and one SECC representative conducted a preliminary screening to determine whether or not the draft submission met the spirit and intent of the CDG and, therefore, should be approved for wider provincial distribution. Once pre-screening was completed, the acceptability of the overall report was determined and outstanding Stage II concerns were communicated to KRL. In this instance, issues included air quality, climate, hydrogeology, recreation sites, and the cost-benefit analysis. A question of timing of the approval-in-principle was raised by certain review agents. Some issues, they believed, should be resolved prior to project approval. It was felt by CGSC and supported by ELUC that if B.C.Coal were prepared to make a commitment to resolution of the issues prior to granting of provincial permits, a favourable Stage II recommendation could be given. The "Gh Stage II Review" was compiled in a different
format to address the specific concerns and the agency responsible for the comments, while socio-community concerns were compiled separately. ELUC granted approval-in-principle to B.C. Coal in August 1981, and authorized the company to complete negotiations on specific terms and conditions for permits. There was an understanding that the company was obligated to negotiate, in good faith, four outstanding Stage II concerns—air quality analysis, hydrogeological analysis, recreation impact management, and cost-benefit information. Milligan and Mickelson (1983, p. 19), in summarizing B.C. Coal's experience with the CDG, noted the advantages the Greenhills project enjoyed over many new mines:

The major advantage was that B.C. Coal had an existing operation near Sparwood, and thus had a vast range of experienced personnel to contribute to the project. The framework was already in place for areas such as finance, marketing, purchasing, administration, accounting, computer services, geology, transportation, housing and environmental services. For the EIA, the monitoring programs drew heavily on the ongoing work of Fording Coal immediately to the north, as well as on the programs of the Balmer group to the south.

The project appeared to take 23 months to achieve approval-in-principle. Milligan and Mickelson (1983) noted that, from first exploration to operational start-up, 15 years had elapsed. In 1983, B.C. Coal's Sparwood operation slowed, with layoffs and a reduction in the planned start-up of Greenhills also occurring.
5.2.3 Sukunka

The Sukunka mine was owned first by Bremeda Mines, then by Coalition Mining Company, and later by B.P. Canada. Some exploration was begun in 1969, although formal exploration did not proceed until 1971. The Sukunka coal licences are located in the Peace River Coal block in the area shown in Figure 14. Prior to the initiation of the CDG, a preliminary environmental study "S/B Prelim." was conducted. In 1975 and early 1976, negotiations were begun to determine the respective feasibility study responsibilities of the coal companies and the province for NECDS. Teck Corporation prepared and presented a prospectus to the CGSC on the combined Sukunka/Bullmoose properties in December 1976 with a proposal for shipment of one-half million tonnes of coal via B.C. Rail to Neptune Terminals, Vancouver.

A revision to the development plan caused a new "S/B Prospectus" to be submitted by B.P. Canada in August 1977. This second one proposed that two and one-half years be taken to complete environmental studies and achieve ELUC consent, with construction planned to commence in 1980. In accordance with CGSC procedures, a draft of Stage I, Phases I and II was submitted, but in a letter to B.P. Canada it was rejected because it dealt inadequately with the two-phase concept, the impact analysis, and impact management proposals. In February 1978, a revised addendum "S/B Stage I, Phase I" was submitted. Three months later, "S/B Stage
Figure 14 Location of Coalition Coal Lease Area
I, Review" was returned to the company with recommendations for further Stage II study; as well, concerns were expressed regarding the access road details, the Chetwynd loadout, baseline monitoring, and the SIA.

The Sukunka project had a large inventory resource from which to draw when Stage II documents were prepared. The Environment and Land Use Sub-committee had prepared studies in the region for the previous two years, and an annotated bibliography of these studies was referred to when the "S/B Stage I, Review" was returned to B.P. Canada. In July 1978, B.P. Canada met with the CGSC to brief them on Stage II planning progress, and the company continued to study the project with a draft Stage II document submitted in August 1979. Informal communication between CGSC and the company caused revisions to the document, and the formal "S Stage II" was submitted in December 1979. Noted as a model document and typical of the CDG process (Crook, 1982, Personal communication), this submission was followed by a period of detailed agency and company discussions with reference to the two-phase development proposal. In March 1981, Phase I of the Sukunka coal project was granted ELUC approval-in-principle, subject to a number of conditions. The company's "excellent spirit of cooperation" was noted by Stephen Rogers in 1981 in the notifying letter to the company. The Phase II concept was generally supported, but further submissions for Phase II were requested before the
second phase could finally be approved. Sukunka project planning ceased in late 1981, the result of external project problems.

5.3 Document Evaluation

The document evaluation questionnaire, as provided in Appendix A, was applied to the documents listed and coded in Appendix B. The document elements of authorship, timing, purpose, format, methodology, and content were evaluated according to the criteria described earlier in Chapter 1, section 5.2.

5.3.1 Authorship

The Line Creek case may indicate that the CDG program was weak, in that assessment information had little effect on the overall company decision regarding development planning. CNI used two approaches in their document preparation. First, the "L.C. Prospectus" was presented by Mitsui and Co. as a statement of their initial position, although consultant and contributing agencies, who provided primary exploration and feasibility evaluations, were not identified as authors of the document. For example, results of pilot plant assessments prepared by Birtley Engineering, and coal assessment studies from Consolidated Coal, were incorporated into the prospectus yet not cited. This document was a statement of CNI's development planning to that date, and included few environmental or social issues. The "L.C.
Expansion" was also presented as authored by CNI alone with the conclusion the responsibility of CNI only. In this document, CNI concluded that their proposed expansion would have limited incremental impact over that previously approved. This conclusion was drawn prior to completion of a proposed set of additional studies designed to examine that question. CNI appeared to emphasize technical criteria when they were seen as authors of their own reports.

The second approach employed by CNI in presenting documentation was to employ external consultants to conduct studies and prepare reports. In "L.C. Stage I," BCRC's Division of Applied Biology was clearly identified as the author of the studies. They organized the research by providing project supervision and group leadership services, while engineering, water quality, environment, and socio-economic sections were prepared by other specialists. The "L.C. Heritage Assessment" was prepared by a four-man consulting team, with a single author under contract to BCRC. The "L.C. Stage II" was prepared by BCRC, with project supervision and management provided by various research sections using ten BCRC contributors. "L.C. Pop. Study" was coordinated by Underwood McClellan Ltd., with a study team of three analysts. In the first approach, the company presented its plans as the product of its own research, whereas in the second approach, one might conclude the project appraisal documents were prepared primarily to meet
government requirements.

The Greenhills coal project utilized a different organizational structure to prepare their formal documents. KRL developed a project feasibility team concept with an in-house manager of Environmental Affairs and Special Projects. Much of the environmental study work and planning was coordinated in-house, with the result that the mine development plan, exploration activities, and general geological, hydrological, and reclamation studies were carried out by B.C. Coal personnel. The consultant, BCRC, was responsible for aquatic resources, water quality, surficial geology, soils, vegetation, wildlife, resource use, and climate and air quality, with assistance from KRL personnel and BCRC also coordinated their efforts with those of other sub-consultants; however, the "Gh Stage I Socio." and the "Gh Pre-Production" report were not as clearly coordinated by this joint company/consultant team approach. The latter document was a KRL presentation with two technical reports--geotechnical and engineering studies--appended. Designed as an addendum to the earlier assessment, this document provided government-requested information but did not reflect integrated company planning for the environmental and social consequences of their pre-production request.

The "Gh Stage II Environ." and social reports most clearly reflected the integrated team-authorship concept. When the team approach was used, KRL was more concerned
with the specific impacts created by their proposed development and there appeared to be a stronger commitment to corporate policies and mitigation plans in these documents.

The Sukunka case illustrated a full range of possibilities for proponent document preparation, with the "S/B Prelim. Study" the product of consultant research. Again, BCRC provided assessment study supervision, study design, data collection and processing, and reporting services. While this document served well as an initial assessment for the proponent, it did not provide assurance of company agreement with the content or conclusions. If integrated with later corporate mine-development planning and evaluation the study may have been useful, but no evidence of its later use was found. One place the preliminary study may have been used was in the "S/B Prospectus," a statement of B.P. Canada's exploration research and intent. In the preparation and authorship of "S/B Stage I," B.P. Canada utilized a complex system of consultants, with BCRC in joint venture with IEC and four sub-consultants. Each major consulting firm had a project manager with BCRC providing project coordination, and responsibility for assembling and coordinating the report; there was no obvious commitment to utilize the findings in the document. Nevertheless, in appearance, presentation of the "S Stage II" report was clearly the responsibility of B.P. Exploration Canada.

In summary it appears that the most common corporate
approach to preparing CDG formal assessment studies was to separate the company from the conclusions; hence, from commitment to utilization of results. To be acceptable, CGSC required that all documents be submitted in the proponent's name, the most desirable documents clearly integrating environmental, social, and technical information. To achieve this result, study coordination may have been most effective if developed from within the company.

Choices of the review document format, distribution, methodology, and, in some measure, content, are a reflection of the individual author, or the CGSC coordinators' ability to manage information within the context of their agency responsibilities. For the cases examined, authors of the review documents changed over time and, with them, the commitment of government decision-makers to support the review document content. The "L.C. Stage I and II, Review" and "Gh Stage I, Review" were coordinated by J. O'Riordan as chairman of the CGSC. Later, Line Creek project reviews as well as the "Gh Stage I, Review" were coordinated by Eric Karl sen, acting chairman of CGSC, and John Dick, CGSC secretary. All three worked within ELUCS which, as lead agency, had an integrated resource management orientation. The "Gh Stage II, Review" and the Sukunka reviews were conducted under the chairmanship of J. D. McDonald, with R. Crook as CGSC coordinator. Both worked within the Inspection and Engineering Division of MEMPR, the ministry with a mandate to support
mining and its contributions to the economic growth of British Columbia.

5.3.2 Timing

Figure 11 (on p. 153) summarized the timing of each project and its documents relative to the approval-in-principle. Company construction and production plans are contrasted. Most of the Line Creek documents were prepared and reviewed in 30 months prior to construction and production, but incomplete assessment of community impacts and changes to major development plans, including alteration of plant preparation design, created a situation where further studies were requested after approval-in-principle. As a result of increased local information and more experience with social assessments, expectations changed for CNI's community policies, and shifting market conditions altered company production plans. Thus, although the CDG program was followed, this did not restrict the CDG administration from continuing to examine issues for a further 34 months after approval had been given. CNI, after receiving approval, was not released from continuing to address issues raised by their development planning, and it was a number of intervening factors, not the guidelines program, which arose to cause delays.

In the Greenhills project, KRL attempted to meet its critical path plans by allowing a four-month float
period and obtaining an early set of permits; thus, in 24 months' time, approval-in-principle had been obtained, with the aid of pre-production permitting. However, the CDG administration has left itself open to criticism by not strictly following the guidelines design. The Sukunka case, by contrast, required 44 months, the longest of any project appraisal period examined. In this case project planning proceeded in an area in which there was no existing infrastructure for resource development, and although the company had allowed 30 months for project appraisal studies and approval, a period of detailed government discussion regarding their two-phased development plan was not anticipated. Cessation of project planning was due more to numerous project design uncertainties, world market conditions, and an uncertain infrastructure completion deadline, than to the CDG project appraisal program.

5.3.3 Purpose

Not only did the purpose of formal documentation change as the phases of project planning proceeded, but the purpose of each phase differed for each project. This flexibility allowed by the CDG program resulted in documents that enlightened specific government agencies, rather than the public, and readers outside government or those not directly concerned with the mines may have had difficulty with the resultant inconsistency. None of the prospectus
documents included a statement of purpose, although the CDG description stated that the prospectus would be used to notify government to enable them to "compile existing data sources and prepare an information base to assist the proponent in Stage I studies" (B.C. ELUC, 1976, p. 6). It was expected that the proponent would receive cooperation from the government in collecting data for its assessments, which implied government agencies would have the manpower and resources to assist a company when requested. Furthermore,

... as a result of the prospectus, Government agencies [would] be able to assist developers in assessing the existing information base quickly to identify major gaps. (B.C. ELUC, 1976, p. 6)

This implied that, before Stage I submission, companies would have access to regional information.

The purpose of Stage I became a source of confusion within the CDG program because developers pursued project approval, while government agents sought problem identification. The statement of purpose in the CDG offered little guidance because it was general rather than specific, and contained multiple objectives. The Stage I report was designed to mark a phase of joint industry-government planning, as illustrated by the case studies. This confusion was partly resolved through experience gained by proponents and administrators as the CDG proceeded. For example, "L.C. Stage I" stated that its overall purpose was to fulfill the criteria for Stage I environmental studies. This document
identified three more specific purposes: to provide an overview of baseline conditions; to document major interactions between the development and the environment; and, by identifying deficiencies in existing data, to make recommendations for further environmental studies. Literal interpretation favoured biophysical impacts, as community development and the regional economy were not seen as issues to be discussed in the document. There was no stated intent to discuss development options or alternate design solutions, and it was not made clear that data gaps were to be related to monitoring; so, by omission, these issues became the responsibility of government.

In "Gh Stage I Environ.", a later document, the purpose was stated more fully, matching closely the requested Stage I objectives. Here, the statement of purpose was presented in a more methodical, rational sequence. The report described the proposed plan as follows: to use existing baseline data and conduct preliminary field and lab studies, analyse and interpret the baseline data, assess potential significance on environmental components, assess development alternatives, and recommend further studies. Impact management was to be addressed through reclamation objectives to re-establish watershed values on all disturbed lands as soon as possible, and to accomplish restoration in a manner compatible with the potential primary surface-use of the land prior to disturbance. There was, however, still
no proposal to conduct an economic evaluation, or to include public consultation. In the "Gh Stage I Socio.", a stated KRL objective was to attract a qualified, stable workforce at the lowest cost to the company.

The "S/B Prelim." study gave a very simple statement of purpose: "to determine the major environmental sensitivities which may be affected through mine development," while the purpose of the "S/B Stage I" was to outline the proposed development, describe the biophysical, social, and economic states, identify and document specific impacts associated with the development, examine alternatives for mitigation or avoidance of such impacts, and identify constraints. In the absence of clear CDG program direction it was left to the proponents to define their study purpose.

In all cases, the Stage II statement of purpose was much more clearly conceived, despite broad CDG direction, and each objective was presented as a single statement in methodical order. Each report indicated that it would describe the proposed development plan, assess the alternatives, analyse, interpret, and describe the environmental site-specific impacts, determine methods for avoiding or minimizing negative impacts, and determine further studies for monitoring. The "L.C. Pop." study was intended for use by the MMA and contained alternatives with a concisely defined set of objectives which were to establish the probable annual geographic distribution of CNI's employees for the
various communities, and to predict the distribution of L.C. employees in 1982. The "Gh Pre-Production" report identified its purpose as to "seek interim approval for pre-construction work permits prior to major construction phases and to proceed on schedule and within economic limits."

This document had a single-purpose objective and did not deal with environmental or social issues.

The purpose for the review documentation was more difficult to identify from the CDG description. The guidelines provided little direction regarding the review, other than to "indicate the degree of success that the identified alternatives are likely to have in meeting the environmental protection standards and other government interests" (B.C., 1976). This directive presented one of the key problems for the program because there were no stated standards for conducting the review; therefore, government agencies held varied expectations for the reports. Some agencies, particularly those with permitting functions, had standards which could be measured, around which they focussed their reviews; for example, the Waste Management Branch had pollution objectives which the developer was obliged to meet. Others, such as the MMA, had drafted requirements for socio-economic analysis, and the EEC had specific information requirements necessary to conduct their evaluations. However, because review criteria were not indicated in the guidelines, developers found themselves facing a continually expanding
set of information requirements.

5.3.4 Format

The prospectus documents were substantially different in format for each stage and for each case, with their length varying from 13 to 32 pages. In each case, the document was one volume with either a separate summary or an abstract at the beginning. Because the "L.C. Prospectus" provided information exactly as requested in the original CDG description, it was very technical in nature, and yet there was little analysis of options or alternatives. While the summary and maps identified the site of the mining properties, the presentation of labour-force estimates illustrated a problem typically faced by corporate planners, wherein later evidence revealed an underestimation of the size and composition of the workforce.

In the format of "S/B Prospectus," the only constraints identified were the lack of information on the choice of railway route and on the completion date for the port facilities. Assumptions that were not made explicit were the assured building of Tumbler Ridge, and the expected approval of a new port facility. The format did not include any indication of environmental impacts despite the earlier "S/B Prelim." study and, as in the other prospectus documents, the area maps, geologic structures, reserves, and deposit extent were clearly presented but lacked a list of
references.

In all cases the Stage I documents comprised two volumes, often with Volume 1 containing the report and Volume 2 the tables, figures, and appendices. The "Gh Stage I Environ." was a separate document from the "Gh Stage I Socio." This format, evolved at the request of the CGSC, facilitated distribution among review agencies. The administrative advantage occurred at the cost of separating the impacted dimensions into two entities which were never integrated. With this format the total range of impacts created by one project was not cumulated. Although in all cases documents included a summary, the "S/B Stage I" provided the format which most comprehensively dealt with the development plan, environmental data, impacts, and mitigation, as well as recommendations. However, there was no socio-economic section in the overall summary, the latter being presented as a separate sub-section within the report. "L.C. Stage I" summarized the development plan only, and the phrasing of the mine design description left little room for consideration of alternatives. In this example, the table of contents was largely a detailed list of biophysical attributes and all 22 references were biophysical in nature. Over one third of the references were local inventories, one quarter were of specific biophysical methods, and the rest were general inventories or keys and analytic items, with a few regulations. Of the 27 appendices, all but one detailed
biophysical information. Development constraints in the "L.C. Prospectus" were identified as an existing railway and the location of the coal reserves. The conclusion, based on these constraints, was that there was no alternative site for development facilities. The "Gh Stage I" reports, by comparison, were generally clear, easily read, and well organized. The separation of methods, development plan data, and environmental data provided a useful format.

In all cases the Stage II reports were much larger documents. The 3-volume Line Creek report comprised over 300 pages of text, a volume of tables and figures, and a separate appendix. For the Greenhills project there were four Stage II volumes, three being associated with the "Gh Stage II Environ."; the summary in Volume 1, and two volumes of appendices. The "Gh Stage II Socio." comprised one volume, including appendices. The "S Stage II" had four sections: Volume I contained the summary; Volume 2, Section A contained a technical description, and Section B the biophysical assessment; Volume 3 provided the socio-economic assessment. In all cases, although these reports appeared adequate to meet the formal evaluative requirements, observations for improvement were made. Much of the contents was a repeat of previous documents, and a summary of the project's changes from previous assessments was not given. Format techniques to aid communication may have been useful where identified impacts were cross-referenced with
intended monitoring and mitigation plans. The "Gh Stage I Socio." provided another format variation, with comments and conclusions included within the table of contents or outline. The "L.C. Stage II" continued to show a heavy emphasis on biophysical information, with three quarters of the references being biophysical in nature. A glossary of terms was not provided, but some terms were defined in the "Gh Stage II Socio." text. Assumptions were generally not made explicitly, and graphics were usually presented in the volumes of tables, figures, and appendices.

It was the non-formal proponent documentation that provided extreme examples of format. The "L.C. Expansion" did not identify assumptions, but, rather, provided statements of corporate belief. For example, CNRC expansion principles were identified as being:

... [to] fully utilize the productive capacity of the two preparation plants, to increase scheduling to meet current contracts and to produce increased tonnage through an expansion of mining operations. The objective was to ensure the optimized production of thermal and metallurgical coals according to the contract's quality of parameters. ("L.C. Expansion")

There were no studies cited in support of the CNRC assertion that the expansion would have only limited incremental environmental impact, or that the currently negotiated marketing contracts on which the expansion was based were, in fact, secure. With the previous analysis heavily weighted to biophysical concerns, it was not surprising that the SECC, through the CSGC, required further
studies and adopted a working policy to deal with expansions. The "L.C. Pop." study was the result of the concerns over lack of social impact analysis and is, with respect to the evaluative criteria of this study, an example of a more useful impact assessment format. This single-volume report contained a separate, 10-page summary and assumptions were clearly identified. The document authors assumed that the Line Creek project, Fording Coal's expansion, and the Greenhills project would proceed, and that Elco and Sage Creek would not. The report assumed a continued demand for coal and no major world recession. Constraints to data procurement and investigation were identified as the limited timeframe for the study, which justified the use of extensive secondary information. Intangible values were described as such and addressed within the methodology of the analysis. The references were clear, the tables and graphics were useful and illustrative and, by providing information in this format, allowed the reader to judge the conclusions in light of the assumptions and constraints.

The format of the review documents became more useful as ongoing experience with the process was gained by government review agents and CDG program administrators. In all cases, the formal documents required by the CDG program were responded to by means of a formal review document, generally 30 to 40 pages in length. The proponent's
informal presentation did not receive formal documentary response, with the exception of "Gh Pre-Production Review."

Three review formats were utilized as the review process evolved, but none had a table of contents, index, clarification or order of concerns. Because of the format in the "L.C. Stage I, Review" and the "L.C. Stage II, Review" there was an overlap of comments and conflicting advice, and comments that may have been relatively insignificant were placed beside important observations. Some of the comments provided references to other sources of information but this practice was inconsistent, and the socio-economic comments were organized in a format different from those of the biophysical review. The agencies who received the reports were identified, the replies were listed, the comments were organized by subject, and within the comments specific government agents were shown as sources for further company contact.

A different approach to the government review format was taken in the Greenhills project, where the comments were transmitted to the company as received by the CGSC, with the agent and agency clearly the author. This approach was taken with the "Gh Pre-Production Review," where the agent responsible also had his comments sent directly to the company. This format precluded any opportunity for the comments to be altered from the writer's intent, and it gave KRL a basis for their observation that there was much
government overlap.

The "Gh Stage II, Review" illustrates the third approach, with an introductory statement of review highlights, a discussion of the overall acceptability of the project, and four issues identified as priorities. A specific compendium of comments followed, organized by subject and then by ministry. A summary of the ministries' overall positions initiated the comments, and then specific agency concerns were given, which were further classified as being advisory or regulatory, with the region of concern, either Victoria or regional noted. The organization of comments was consistent, and edited, and the socio-economic comments were presented in a similar format, with the advantage that a large amount of information was transmitted to the companies.

The review document for the Sukunka project provided the best example of a useful format, given the criterion that the communication should be useful to the recipient. In the "S/B Stage I, Review," the general comments or highlights were classified as to frequency of occurrence, and items addressed in the Stage II studies were considered priorities. In this review the comments were classified, first, according to the expectations that the proponent was to meet regarding permits and regulations for the specific development proposal, and, second, to the physical setting, with specific comments provided regarding corporate
mitigation planning. Comments deemed to be technical in nature were excluded from the advice for development planning and presented in separate appendices. With this classification and priority, the document was more useful to the proponent.

The "S Stage II, Review" was unique in the evolution of formats for government review information, with an eight-page summary statement appearing first, then general comments, followed by the socio-economic aspects. The comments were phrased as recommendations, opportunities, and conditions for approval, with biophysical aspects and significant concerns to be met prior to approval. A complete compendium of comments followed, both socio-economic and biophysical, and a table of contents and list of abbreviations were included.

5.3.5 Methodology

The first phase in rational project planning for the proponent was to identify the scope of the problem. The level of detail and the degree of analysis could be minimal but there had to be evidence in the prospectus that the full range of issues was considered. The "L.C. Prospectus" had no identifiable methods section, and the types of tests conducted were only briefly mentioned. Primary data were obtained from air photos and seam outcrop tracings, and coal-core and reverse circulation drill-hole samples.
Information was included in blueprints of the mine deposit and three-dimensional models were used to describe and design the conceptual mine plan. The method employed to estimate the workforce considered the operational phase only. CNI estimated the number of workers needed and multiplied that by the estimated man-shifts for 1974 dollars based on the KRL-UMWA contract, and then predicted the value of employment for the project, all of which was implied but not detailed. This value substantiated the implications that increased employment was one of the benefits of the project but as the method was not explicit, validity could not be ascertained. With the data incompletely referenced, the report also assumed reader familiarity with the technical methods which generated the conclusions, and there was no indication of confidence limits to the predictions. This approach to methodology resulted in a highly selective report, with unrealistic proponent expectations reflected by an unrealistic critical path plan.

The "S/B Prospectus" provided similar observations, with information generated mainly from primary sources based on company field studies. Some data gaps were identified, however, and an indication of the confidence of predictability was provided for coal quality characteristics but not for production values or employment projections. The forecasting technique used was a geological model to predict the extent of the deposit, which enabled the
conceptualization of the mine plan. Both prospectus documents were methodologically inadequate as assessment vehicles because they failed to address all of the problems or identify possible corporate alternatives, and both resulted in mistiming.

The next phase of rational project planning occurred where exploration and profile feasibility studies were done and mine plans changed as more information was gained. Interim financing options were considered during exploration of initial marketing options. To ensure rational planning, environmental information should be closely incorporated into the locational analysis, cost calculations, and design considerations. Corporate conceptual planning should include investigations into assumptions relating to groundwater, hydrology, waste rock, surficial geology, fish and wildlife, and vegetation. Reclamation and water-quality planning should be conceptually planned for and costed. The regulatory requirements should be examined to formulate possible corporate policies for housing, labour issues, community development, and generalized cost-benefit. This preliminary government prospectus planning should be reflected in the Stage I report, at which time the potential viability of the project may be determined by the company.

The "S/B Prelim." study identified the methods used for its analysis but they were scientific in nature only and did not meet the above criteria. For example, data were
collected from air photos and field observations, such as measurements of the impacted river in terms of stream discharge, water sampling, invertebrate analysis, and bioassays, while reclamation feasibility was determined by analysis of drill core samples and plant growth experiments. Despite the fact that soils data were not collected, the report identified the high erosional potential of the fine-textured soils, and its usefulness as reclamation topsoil. The bioassay results were not replicable, and data were provided which did not make a specific point. Despite the methodological inadequacies, the reclamation advice may have been useful had a later integration with the mine design occurred.

The "L.C. Stage I" was the only document to include a matrix demonstrating the extent of impacts. Again, most of the methods used were designed only to collect content-specific information. Both primary and secondary data were collected from a wide variety of sources. The MOE Resource Analysis Branch provided Canada Land Inventory maps and in-house maps on recreation, climate, wildlife, aquatics, soils, and vegetation. The level of detail was insufficient for site-specific analysis but was generally adequate for this phase. The Water Investigations Branch provided floodplain analysis; Fording Coal added weather and water quality data; CNFP afforded climate and forest cover maps; and hunter-sampling data came from MOE.
In the references this report contained 32 per cent primary data sources and 68 per cent from secondary sources. This observation may be erroneous, however, as the data for most of the inventories were collected but not referenced or available as BCRC in-house studies. There was some evidence of current, resource-use data having been collected from local sources, with secondary information secured from the Canada Land Inventory and the Archaeological Sites Board but, as observed previously, the assessment of social issues received less attention than the biophysical impacts.

Many methodological weaknesses were observed in the "L.C. Stage I" document; for instance, the tables failed to show, consistently, the sources of their data, the CNI-generated data, other consultants' reports, or academic references. Some of the information was repeated from earlier documents; for example, coal reserves and workforce estimates, hence, retaining their original problems. The level of confidence for predictions was given occasionally but evaluation of the size of the impact was not considered. The majority of the techniques emphasized collection of baseline information on wildlife, fish, and vegetative populations, while non-biological characteristics were thoroughly inventoried. One analysis provided a forecast for local human population distribution, but data gaps made that forecast unclear; and, although the information was
cited in the summaries and the matrix, the implications were not made explicit. This document did, however, set confidence limits on reserve estimates and addressed uncertainties by considering a number of locational alternatives.

The "L.C. Soc.-Econ." analysis provided another case where the forecasts' assumed values were not identified. For example, the need for increased coal production and, hence, employment was based on an assumed continued market increase. This assumption was not unique to KRL, their consultants, or the MMA. This determination, made through regional planning strategies, included possible development scenarios where the future of the Elk Valley was forecast in three stages to the year 2000. Likely developments were predicted and the degree of uncertainty given. It was concluded, therefore, that because of new mine projects in the area, the Upper Elk Valley would grow steadily until 1984. As well, community infrastructure thresholds were projected for the Elkford and Sparwood communities, and KRL then provided a base-case, first excluding then including the Greenhills project. A KRL policy decision followed and a workforce locational neutrality was formulated. Development assumptions identified by this method appeared to be exemplary, but both MMA and KRL failed to clarify that all of their conclusions and policies were based on a continually expanding coal market. Consequently, their techniques did not consider a cycle with down-side
economic planning. Policies were not devised for layoffs or partial shutdowns but, rather, predictions included expanding employment opportunities and a chronic shortage of tradespeople. B.C. Coal went on to plan an extensive recruitment strategy, despite the warning that:

. . . the pace of coal development is highly uncertain and dependent upon a wide range of factors such as markets, prices, and technological changes. Forecasts concerning future developments must take account of these uncertainties. (B.C. MMA, 1979, p. 6)

The next phase of rational planning was an evaluation phase, where detailed exploration and feasibility studies were examined by the proponent with a view to optimization. This occurred concomitantly with ongoing market research and financing investigations, and the information collected in the early profile stage was used in planning for management. Aspects of this phase included mitigative design, detailed reclamation planning, water management, and designs for environmental protection, with policies for compensation and community involvement, recreational facilities, housing, and education for project operating philosophy. These policies dealt with the project's contribution to community stability by designing contingency plans for layoffs and shutdowns. The identifiable document for this phase was the Stage II report.

Most of the Stage II documents examined appeared to be extensions of the profiling phase. Information was, again, much more detailed regarding biophysical than for
social community data. The "L.C. Stage II" was comprehensive, a variety of data sources was used, and there were more primary data collected from site-specific studies, including a site-specific flood-prediction model. Investigations also included botanical and seeding experiments in reclamation planning, and biophysical constraints to development alternatives were listed. Probable impacts, given the limitations of extrapolation as a predictive technique, were identified. Each impact type was separated and a statement of expected impact was given. Less clearly revealed was how management plans would address those impacts to facilitate the synthesis for the reader.

The "Gh Stage II Environ." also included information collected from primary and secondary sources, although there appeared to be little use of local-resident sources. Information was derived mainly from various branches of MOE, although all sources were not given, particularly that from the B.C. Coal Balmer operations. Not all of the methods used appeared in the methods section, and there was variation in the type of forecasting technique. Again, the information appeared to be more of an in-depth profile than a report of the company's evaluation of the studies. Minimal reference was made to earlier proponent documents, but a section was included which dealt with development plan alternatives. According to the original purpose, this document appeared to meet its objectives, except perhaps those of alternatives.
for management planning.

As there was no government review of a proponent's prospectus, there was no evaluative role for government agencies, and the corporate problem identification phase was left unevaluated. Had the prospectus been reviewed, agencies would have had an opportunity and responsibility to note, early in the planning, if the project supported or conflicted with their jurisdiction or objectives for that region. Without evaluation there was no opportunity to raise objections to the overall mine concept, and without public review of the prospectus, no expression of particular concerns. Given prospectus review, data collection procedures consistent with government data bases could have been standardized; for example, in aquatic and terrestrial studies and water-sampling network designs.

The review process provided no guidance for resolving inter-agency conflicts, although guidelines for review methodologies were set up. There were cost-benefit guidelines and recommendations for mitigation and compensation but none for socio-economic or environmental studies or for risk or technology assessment. Comprehensiveness of the reviews was achieved through a simple count of agencies that submitted comments. The review methodology was not standardized across the case studies as seen in varied formats of the review comments due to the organizational changes that occurred even within the planning time-frame
of one project. Generally, the comments were more fully reviewed by biophysical agencies, with less attention given by the social agencies, perhaps due more to the method than to the review agencies' interests.

5.3.6 Content

The content in the "L.C. Prospectus" was characterized by identification of the mine development potential outlined in the description of the exploration program and the potential employment benefits presumed to occur from eventual mine production. There was a minimum of environmental impact identification, and the effect of this approach to content was that the promotional aspects or potential benefits of the proposed mine were emphasized at the expense of the possible negative consequences. The "S.B. Prospectus" provided a similar example of approach to content. The potential of the deposit and its employment-generating capacities were emphasized, but content related to biophysical impacts was not provided.

The content of the "L.C. Stage I" document was much more comprehensive than the prospectus, although it tended to emphasize the production phase, with the planning of site facilities and mine pit locations forming a major portion of the content. The environmental setting was described, with indicator categories comprehensively identified, but the actual impact content was generally
speculative and subjective, with a tendency to emphasize the positive impacts such as forward employment linkages, and to underestimate negative impacts such as increased population effects on recreation, hunting, and fishing. The content of the "Gh Stage I" provided a contrast, since it included planning for the construction phase as well as for the operations. The need for government approvals was also identified, and a strategy for achieving this goal was given in the document. The description of the environmental setting was comprehensive but impact analysis was often vague, offering little insight into the issues of responsibility for managing impacts. Both of these documents contained adequate content for Stage I, unlike the "S.B. Stage I."

The Phase I portion of this development plan was insufficient to assess the proposal but this lack was noted in the document review, and an addendum "S.B. Stage I, Phase I" was submitted. The addendum was adequate in terms of development information but, like the other Stage I documents, it did not thoroughly address the impacts of the proposal.

The content of the "Gh Pre-Production" report dealt exclusively with a pre-construction plan. This was the only case document to detail construction planning separately from operational planning, with information on site excavation, gravel pits, transportation route details, and logging designs. In addition, information on impacts to stream crossings and wildlife was identified. The document
included mitigation planning for continuous site monitoring, through a protection and maintenance program. While the report indicated intentions to carry out this program, there was no evidence of a planned increase in environmental staff.

The content of Stage II documents was generally more than adequate with "L.C. Stage II" and "Gh Stage II" providing evidence that alterations to mine design were made to satisfy environmental concerns. However, even though they appeared comprehensive in environmental and technical planning, some important information was missing—for example, planning for port facilities, market arrangements, general financial planning, the possibilities for expansions, and procurement information. There were some content areas in which further analysis could have been included, for instance, regional issues such as ungulate management, alienation of elk winter range, and cumulative air- and water-quality impacts. The cumulative impacts of the mine on community services and housing were not considered, but to cover some of these issues, an additional document, "L.C. Pop." study was submitted. It contained an analysis of the simultaneous regional demand for community services and housing by taking into account other projects in the region, but the content was limited because there was no development information, although the document did cover a range of factors not recognized in the other case documents.
The "L.C. Expansion" was the only document clearly inadequate in terms of content. This was a highly detailed report of specific technical content, with biophysical and social impact information based largely on previous studies but not revised to take expansion effects into account.

The contents of the government review documents were generally adequate, with substantial attention to content detail. When proponent submissions were reviewed on the basis of content, the review comments reflected the content-oriented perspective with the review document following closely the proponent's presentation. In summary, the content aspect of the documentation was generally not the limiting feature of the appraisal, particularly because the review procedures revealed missing information. The documents were often more limited by their methodology and format than by their content.
Chapter 6

PROGRAM OUTCOMES

An Environment of Varied Concern

Where the need to plan is greatest because changes have accelerated beyond the levels of past experience, planning tends to be least effective; where the amount of perceptible change is small, so that planning can be carried out on the basis of nearly perfect knowledge, it is not needed.

- Friedmann (1978)

6.1 Introduction

Since the beginning of the coal boom in 1969, 31 properties had been explored for coal in B.C. With the implementation of the CDG, 20 coal prospectus documents had been submitted, and nine coal mine proposals had completed the program, six of which had proceeded to further permitting and construction. A complete summary of the output of the guidelines program is shown in Table 3. One mine, Line Creek, had begun only limited production in 1983. The intended outcome of the CDG program was to plan new mines or to expand existing ones, taking into account social, environmental, technical, and economic considerations. The number of mines proceeding to successful production may not be an indicator of achievement of that goal. As illustrated
earlier, a number of factors outside the CDG program have affected this outcome, some of which were more significant than the program itself. A closer examination of mines which had submitted prospectuses and achieved approval-in-principle indicates that 45 per cent of these were successful. Of the apparently unsuccessful cases, seven mines continued to plan their project, with studies in progress at this writing; two had halted progress pending company decisions to proceed; two were under review; and two had been rejected by the CDG program. Thus, approximately 8 per cent of the original proposals had been rejected by the CDG, an observation that is subject to variable interpretation.

Table 3
CDG OUTPUT SUMMARY: 1970-1983

<table>
<thead>
<tr>
<th>Description</th>
<th>Southeast</th>
<th>Northeast</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property explored</td>
<td>8</td>
<td>15</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td>Prospectus submitted</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Stage I submitted</td>
<td>7</td>
<td>9</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Stage I approved</td>
<td>5</td>
<td>8</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Stage II submitted</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Stage II approval-in-principle</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Stage II to construction</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Stage II to production</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Operational</td>
<td>3</td>
<td>0</td>
<td>1*</td>
<td>4</td>
</tr>
</tbody>
</table>

*limited production

Source: Crook (July 1982, Personal communication)
It may be argued that the CDG program has impeded the progress of mine planning, the assessment requirements being too time consuming or stringent, or it could be suggested that the CDG is ineffective because actual rejection of coal mine development proposals have been few. It also appears, however, that each case is sufficiently diverse to restrict seriously the opportunity for generalization about the success of the program in meeting its objectives from the outcome data alone. To strengthen the analysis, observations obtained from existing critiques of the program and a questionnaire-interview have been used in this evaluation and, together with the observations described in earlier chapters, a broad evaluation of the CDG program is presented below in its context.

6.2 Existing Critiques

Seven of the CDG program reviews were evaluated (Crousé, 1978; Dick and Ringstad, 1981; Hawes and Gadsby, 1982; Keevil, 1983; McDonald, 1982; O'Riordan, 1979; Payne, 1983) using a content-analysis methodology. The relationship of the authors to the CDG program was varied, providing a broad range of opinions. Four of the critiques were written by individuals external to the CDG program and to the provincial government. Two external reviews were written by coal development proponents—Crousé for CNRC and Keevil for Teck Corporation; one was authored by
environmental mining consultants—Hawes for Norecol, and Gadsby for Thurber; and one was by an academic policy analyst, Payne at UBC; four other authors were internal to government. The three government authors were administrators of the CDG program—O'Riordan and Dick of ELUCS/MOE, and McDonald of MEMPR, and one was Ringstad, a review agent for Fish and Wildlife. None of the authors was a program evaluator by profession.

6.2.1 Presentation of findings

The evaluation methodology used by these authors was largely one based on personal experience. Crouse (1978, p. 6) characterized the typical methodological approach when he stated, "I would like to make some comments relative to our experience with the CDG." For most of these reviews, personal experience was the source of information which framed the problem, determined the context in which the issues were discussed, and defined the recommendations for changes to the CDG program. One reviewer, Payne, drew conclusions from a theoretical framework using political economic indicators to conduct his analysis.

Only two of the reviews were written with the express purpose of describing the CDG program and assessing its "strengths and weaknesses" (O'Riordan, 1979, p. 207) and were meant to "provide constructive suggestions for program improvements" (Dick and Ringstad, 1981, p. 3).
Another purpose was non-evaluative yet addressed program amendments (Hawes and Gadsby, 1982, p. 3), in an attempt to communicate the "key components in planning a successful environmental study program." Keevil's (1983, p. 4) intention was to "provide a general overview of issues involved in development of a new coal mine." Payne (1983, p. 2) identified his purpose as the "formation of effective policy . . . and concrete alternatives" to deal with the problems "generated by the mining industry." Generally, although the intent of five of these reviews was not directly to evaluate the CDG program, each contained a number of recommendations which bore directly on administration, legislation, or the methodology of the CDG program, and, thus, were considered useful for the present study. Hawes and Gadsby acknowledged CDG administration and other mining consultants as having contributed to their analysis, and Keevil cited the experience of another mine developer, Ron Dalby of Gregg River Mine, Alberta, as a supporting source. Payne used 58 citation notes to substantiate his discussion, but the other authors did not provide references to add to their personal experiences.

Five of the reviews had first been presented as written documents to support oral addresses. Crouse, Hawes, and Gadsby gave presentations to the Mine Reclamation symposium, an annual meeting sponsored jointly by the MEMPR and the B.C. Mining Association. Payne addressed a meeting of
the Canadian Regional Science Association, and McDonald the
NECD Coordinating Committee. Keevil delivered the inaugural
speech to a workshop on "Project Assessment, Western Cana-
dian Coal Development," while O'Riordan's paper formed a
chapter in a book on Ecology and Coal Mining, and Dick and
Ringstad compiled their critique as a document specifically
for use within the MOE. In no case was the review prepared
as an evaluation specifically for CDG program administra-
tion.

6.2.2 CDG program
description

The CDG program varied as each author's expectations
changed, because in all cases the program was described as a
reflection of personal expectations. The internal reviewers
concentrated on the assessment aspects of the CDG program
when discussing the nature or kind of program. McDonald
(1982, p. 2) described the CDG as systematically moving
"from a general overview of the project to more site-speci-
fic impact assessments and management proposals." Other
internal reviewers agreed that the assessment activities
form a process that should be systematic or rational and
comprehensive. O'Riordan (1979, p. 208) expected that "at
all stages of the process, total impacts of mine development
are considered," and McDonald (1982, p. 1) believed that the
guidelines "are broad in scope, covering the major economic,
social and environmental implications of coal development."
To illustrate the sequential and systematic aspects of the program, two papers provided updated models of the process (Hawes and Gadsby, and McDonald). Three of the reviewers expected the process of assessment to be more than project-specific; for example, Dick and Ringstad (1981, p. 2) saw the CDG as describing a planning process where the assessment "should be thought of as a planning tool that shapes the whole development program," and O'Riordan (1979, p. 212) expected that "from its inception [the CDG] should be responsive to the . . . goals of the region of development."

These expectations implied that a consensus of goals was possible, and assumed that a technical capability existed to gather large quantities of information and that the analytic ability existed to handle it. The external reviewers had more restrictive and less comprehensive expectations for the assessment aspects of the CDG. Hawes and Gadsby (1982, p. 2), for example, saw the assessments as "primarily technical in nature."

The review aspects of the CDG were highlighted by those authors who initiated developments—the proponents. Crouse (1978, p. 6) saw the CDG as an analytic and critical process "designed to take issue with a development plan and point out its inadequacies." Keevil (1983, p. 6) saw the approval aspects of the review as the primary characteristic of the CDG. He observed that governments "employ armies of bureaucrats to pass judgement on new projects." His
observations may have arisen because proponent documents were, as noted by O'Riordan (1979, p. 209), expected to be "reviewed for major information gaps or misrepresentations of government policy or data which could delay its final acceptance by the government agencies." Because the review was expected to be as systematic and comprehensive as the assessment, Keevil (1983, p. 6) observed that he could not "think of a single department that does not in some way get involved with the approval of a new coal project." This created a concern because external reviewers expected their prevailing value assumptions of efficiency and expediency should be the criteria used for the review. Internal reviewers expected that equity and intangible values should be accounted for in the assessments. Payne (1983) had expectations that were not fulfilled either by the assessment or the review aspects of the CDG program; he described the CDG as "based on studies undertaken by the companies themselves on the basis of closed-door consultations with government departments" (p. 31). This identified another problem, that of public access to the program and the expectation that decision-makers had the power, time, and resources to implement optimal solutions.

These varied expectations gave rise to different definitions for the elements of the various program aspects. Thus, Stage I and Stage II descriptions varied in purpose, with the authors' assumptions influencing their descriptions.
of how the program should be conducted, who should participate, and what the extent of the input should be. The descriptions of the expected CDG program decision-making procedures further illustrate the range of observation among these reviewers. The authors described decision-making procedures which were not the "one-window approach" to the project appraisal process expected by the MOE (Dick and Ringstad, 1981, p. 3) or suggested to the coal developers by the program's administrators (McDonald, 1982). Identified exceptions to this approach included the following:

1. Management of land use, reclamation, and economic impacts of coal exploration programs are undertaken through separate programs administered by MEMPR (O'Riordan, 1979, p. 209).

2. A number of government agencies have specific and continuing responsibilities to ensure that design features and monitoring programs (conditions to various licences) are carried out by the developer after approval-in-principle (O'Riordan, 1979, p. 211).

3. A confidential economic analysis is reviewed only by the CGSC and ELUC (O'Riordan, 1979) and not by other review agencies.

4. Ministerial discretion is the deciding factor for approval of reclamation reports (Dick and Ringstad, 1981).

5. Regional and municipal levels of government
have regional plans and municipal zoning policies to which coal development projects should conform (O'Riordan, 1979).

Because of the problems in understanding the decision-making process, considerable effort was expended by several reviewers to clarify the procedures (Hawes and Gadsby, 1982; McDonald, 1982; O'Riordan, 1979).

Despite these attempts at clarification, a subtle but important conflict continued to exist over who administered the CDG and who decided whether or not a new coal mine may be developed. Most of the internal reviewers identified the ELUC as the political body responsible for making these decisions, yet reviewers' observations of specific cases have provided exceptions to this expectation. Keevil (1983, p. 7) described how Teck Corporation and partners "cope" with their perception of slow institutional decision-making. They "spent over $50 million in construction between the time of [prospectus] submission and the final agreement."

This approach, Keevil (1983, p. 7) acknowledged, may "not be so easy or appropriate with public sector regulatory bodies," but he hoped that "applications are processed carefully but with a sense of urgency--indeed with common sense."

In using the approach of proceeding with construction prior to official approval, a distinction was made, where Keevil (1983) assumed that the concept of their new mine was politically acceptable prior to CDG program
evaluation and that permitting approvals were subordinate decisions which were not time-dependent. Perhaps because of this corporate coping strategy, Payne saw the CDG decision-making procedure as flawed. He argued that the CDG had "no independent legal force to bind companies to any commitment they might give" (1983, p. 31). Given these and further observations, Dick and Ringstad (1981) questioned the actual authority of the Chief Inspector of Mines, the role of the MAC and the ACR, and the authority of regional and municipal governments. The issue was more than the conflict in expectation of when, by whom, and how a decision to proceed was made. The issue had become whether these unclarified decisions had fettered or undermined other agencies, and their ability to act within their mandate.

6.2.3 Description of program context

All authors presented an historical background or context which framed their comments relative to the CDG. These reflected both the pragmatic concerns of costs, and the difficulties created by political, social, economic, technical, and corporate components as well as for normative concerns which arose in terms of equity. In total, a fairly large number of contextual components emerged and, hence, an aggregate of eight categories of contextual constraints were identified, all of which bore upon the effectiveness
of the CDG program, as follows:

1. The international economic context. The actions of the buyers and sellers in the coal market provided one set of constraints. For example, Payne (1983, p. 1) identified Japan's Ministry of International Trade and Industry (MITI) working in concert with Japanese mining and manufacturing conglomerates in the 1950-1960s actively exploring B.C. for secure supplies of coal. The signing of long-term contracts, Payne (1983, p. 3) indicated, allowed for an exponential increase in coal production in the next ten years. Payne noted that the western Canadian coal producers, multinational companies, often subsidiaries of international oil companies, were directing capital-intensive operations where much of the revenue—returns to capital and excess economic rent—left the province. In a different vein, yet related to international constraints, Keevil (1983, pp. 2, 3) noted that recently Japanese steel production was reduced, coking coal needs declined, and the prospects for new metallurgical coal contracts were less likely. Although the recent oil surplus reduced the demand for thermal coal, Keevil (1983) predicted that the longer term world trend would be to replace oil with coal, and while the potential for a decade of worldwide depression existed, he felt that an upturn in the economic cycle was inevitable. Keevil supported Payne in observing that marketing strategies for western Canadian coal revolved
around the Pacific Rim and that the continued existence or expansion of this market was dependent on a number of factors. For example, the characteristic of coal volatility meant that to be utilized, Canadian coal must be blended, and Japanese facilities were not designed for Canadian thermal coal. Because coal exists in almost every country of the world, and competition is fierce from Australia, South Africa, and the U.S.A., Payne and Keevil agreed that continued demand for more new mines is uncertain, particularly in a province where excess capacity exists. Thus, a situation resulted where there were relatively few customers and lots of potential coal suppliers.

2. The provincial economic context. Constraints to the capture of benefits from the coal industry for the B.C. economy were identified by Payne (1983, p. 2). He believed returns to outside equity investment represented a loss of value to the province. In contrast, Keevil (1983) discussed the international corporate problems of designing a financing package which created the provincial situation Payne observed. Keevil elaborated that foreign governments offered incentives for coal buyers to take equity positions in new mines and even to become involved in the debt, including assistance in approval of purchase contracts or the provision of low interest loans, but the loans were to be made on the basis of equipment purchased
from the coal-buying country. Keevil (1983, p. 11) suggested this was done by the Japanese "with the belief that a spirit of cooperation will be generated, one which is necessary to sustain long-term contracts." To obtain coal-mine debt financing, syndication with a large number of international banks was often arranged, sometimes with a negotiable price for the debt package, which involved foreign-exchange constraints. Payne (1983, p. 10) pointed to the provincial implications of this approach to corporate financing. Creation of barriers to provincial forward and backward linkages was the result. Payne believed procurement policies and foreign investment policies by the federal Foreign Investment Review Agency (FIRA) were more often than not compromised in the face of the corporate financing considerations.

3. The environmental context. Numerous environmental constraints were identified. Hawes and Gadsby (1982, p. 1) noted "mine projects . . . may impose significant effects on the environment over a long period of time . . .," and O'Riordan (1979, p. 212) pointed out that "the value of coal production will always outweigh the loss to [fish and wildlife] resources at any particular site." O'Riordan (1979, p. 212) further suggested that a problematic situation was created whereby:

. . . critical habitat for supporting animal populations is decreased [yet] the total human population
is increased due to coal development and [resulting in] an expansion in the demand for recreational hunting.

4. **The social context.** Keevil (1983, p. 2) saw an "hiatus in coal development as a result of the deep global recession," and Payne (1983, p. 1), in his discussion, pointed to "cyclic instability," thereby implying social impacts would result for resource communities and would act as constraints to coal development. Payne (1983, p. 15) identified the "relatively small contribution of capital-intensive mining to employment, the layoffs, pay-cuts and reduced work-weeks during recession" as resulting in all the costs of the recession being borne "most directly by the workers and communities dependent on mining."

5. **Public involvement.** As a result of these social and environmental concerns, Dick and Ringstad (1981, p. 5) noted that "the general public, especially within the influence of coal developments, are interested and do have legitimate concerns." Hawes and Gadsby (1982, p. 2) warned that "public support or opposition may be a significant or even a major component in obtaining project approval at the political level." And McDonald (1982, p. 2) argued that "citizen groups formed to represent recreation conservation or socio-cultural interests should have a forum to discuss and debate the proposals."
6. **Regional government planning.** Independent government programs could act as constraining factors. For example, Dick and Ringstad (1981, p. 2) provided background on the MOE's attempts to establish "17 fisheries management and 15 wildlife management objectives which would give overall general provincial direction for meeting overall goals."

In addition, they found that fish and wildlife management was "decentralizing into eight regions [which were] currently preparing regional management plans which will quantify regional resource values" (1981, p. 2). The regional planning approach was necessary, they said, because the individual project assessments did not take into account the cumulative loss of values in the region, and reclamation was not a sufficient activity to manage terrestrial and aquatic impacts.

7. **Corporate development planning and feasibility studies.** Corporate planning as distinct from government planning is a constraint. Hawes and Gadsby (1982, p. 3) recognized the need for integration because mine planning "requires a wide range of multi-disciplinary expertise from the exploration, reconstruction and operational stages through to mine abandonment." Keevil (1983, p. 8) identified some of the specifics of corporate constraints. The locational nature of the reserves was one component which would determine the method of extraction and the range of
production capacities which could be considered. Crouse (1978, p. 1) stated that reclamation planning was a part of the total development effort of the project, and included identification of attempts to manage site wastes, and the planning for reclamation scheduling which required vegetation trials, experiments on test pits, and exploration roads. One problem was that effective reclamation planning was restricted by changing mine plans. Keevil (1983, p. 7) declared that the location of mine facilities was based on cost, geography, and environmental and safety factors. Employee housing, power acquisition, and transportation facilities were further considerations. Corporate information requirements were large, with computers often used to collate cost information from suppliers, engineers, accountants, and consultants; thus, corporate decisions as to economic feasibility depended upon detailed costing studies (ibid.). The problems of conducting environmental studies within this framework were, according to Hawes and Gadsby (1982), created because most required seasonal investigations taking at least two years to complete. These studies should be integrated with the government review process, and the information available from government should be utilized (Hawes and Gadsby, 1982; McDonald, 1982).

8. Institutional context. Dick and Ringstad (1981) maintained that the ELUCS developed the original CDG and
their rationale in response to increasing public and agency demand for proper resource management and environmental protection. The Secretariat no longer exists, and "three technical sub-committees were formed to advise the CGSC; the MAC, the SECC and the EEC with a purpose to expedite the review of major project proposals" (O'Riordan, 1979, p. 208); but, over time, their operations have changed, so the changing institutional character itself acts as a program constraint.

No one author appeared to be fully cognizant of the concerns of others when discussing the program context. Their purpose in presenting contextual background was apparently meant to elaborate upon and explain past efforts, and each expected his audience to accept his understanding of past limitations and take his recommendations and conclusions seriously. They all appeared to expect that their concerns should be paramount for anyone involved with the assessment and review of new coal projects.

6.2.4 Findings
The reviewers had varied opinions as to the overall effectiveness of the CDG program. McDonald (1982, p. 4) implied that the program was effective when he concluded that "revisions to the CDG program are not expected to result in major changes." O'Riordan (1979, p. 213) suggested that the procedures "appear to be sound and are accepted
by most developers as a logical and rational approach to project planning." A majority of reviewers, however, indicated that, although the program was sound, it was not without problems. Crouse (1978, p. 7) indicated this when he said: "the procedure is fundamentally sound [however] implementation has been slow and more expensive than necessary." Hawes and Gadsby (1982, p. 2) pointed out that "it is generally recognized in the mining industry that environmental approvals can impose significant hurdles," while Dick and Ringstad (1981, p. 3) complained that "some aspects of the process have become cumbersome, require clarification or are outdated." Keevil (1983, p. 6) found that "regulatory approval can be time-consuming, expensive and frustrating," while Payne (1983, p. 31) indicated that the "cyclic instability of mining has not adequately been addressed in B.C." and that "adequate and enforceable environmental and safety standards" should be established.

The reviewers each detailed their perceptions of the problems of the CDG program, and most of their findings were negative. However, O'Riordan (1979) listed three advantages to the program: the "lack of exhaustive checklists of information required of the developer regardless of its relevancy to the specific project; the coordination of regulatory permit approval; and the staged reporting procedure." Most criticism fell into one of three categories:
timing, methodology, or cost-related concerns. According to McDonald (1982, p. 4), "developers have a problem understanding the timing requirements for data collection and government review." Both McDonald and Hawes and Gadsby (1982, p. 7) found understanding the program sequencing difficult. This was a problem of varied expectations over responsibility for ensuring integration of assessment studies in corporate feasibility planning. O'Riordan (1979, p. 211) suggested that Stage I and Stage II reporting times should have been scheduled to coincide approximately with the completion of preliminary and detailed corporate engineering and economic feasibility studies because the critical points in the mine management decision process occurred at the order of magnitude, budget estimate, and final feasibility studies. Hawes and Gadsby (1982, p. 4, Figure 1) showed that, with a well-designed study program, and assuming that no significant issues developed, it would take a minimum of two years from submission of the prospectus to the obtaining of mine approvals. In describing corporate considerations relative to the problem of study timing, Keevil (1983, p. 12) believed that "exploration, planning and development stages precede approval, marketing and financing stages." With this view, company planning procedures become functionally separate, and not integrated with the approval's process. Keevil (1983, p. 1) implied that his approach included the required assessment aspects,
but the problem of obtaining approvals first was that it could be time-consuming, and might result in missing critical short-duration "market windows," and that "corporate staff-time to work on approvals for a project that might not go ahead . . . is not productive." Therefore, timing was seen as critical in the approval's program and should be modified.

A different view of the timing problem was raised by the internal reviewers. O'Riordan (1979, p. 213) conceded that "implementation of the CDG has been slow, and government reviews are cumbersome and prolonged and can delay planning of the next CDG program step," but to mitigate this, he noted that "developers are encouraged to apply for necessary permits after Stage I is completed" (1979, p. 212). Dick and Ringstad (1981, p. 5) raised the problem of timing around another issue; they found the 20-year mine plan arbitrary, and "established only to facilitate viable marketing strategies . . . with potential mine production far beyond the initial twenty years." The implied problem was that assessments designed around a 20-year time frame, by definition, do not consider long-term inter-generational impacts extending beyond the initial planning frame.

Findings with respect to methodology fell into two sub-categories: those related to the assessment aspects and those related to review procedures. Problems with the assessment aspects included the inability to resolve the
paradoxical and uncertain expectations of assessment quality (Hawes and Gadsby, 1982), where government always expected a realistic and reliable mine plan, yet one capable of being modified. To achieve this, the government's method was to request detailed baseline inventory information, with the result that assessment documents were "filled with inventory data and are rather weak in defining a systematic process for identifying specific environmental and community servicing problems" (O'Riordan, 1979, p. 212). Hawes and Gadsby (1982, p. 2) criticized the CDG program and not the developer for the inability to achieve an integrated assessment by not "describing a clear engineering, environmental and project decision-making process." They implied that the CDG program should clarify the requirements and force developers to integrate the corporate feasibility studies with environmental assessment studies. Dick and Ringstad (1981, p. 4) indicated methodological concerns with the assessments when they observed that:

... developers have tended to ignore the fact that the impacts of a number of projects in an area will be cumulative and that industrial development brings with it a number of indirect impacts associated with ancillary population growth and development may outweigh even the direct impacts.

The rationale for using reclamation methods as the only tool for management of terrestrial impacts was also identified as a problem (ibid., pp. 5,6).

Hawes and Gadsby (1982, p. 7) asserted that developers have "problems understanding the review methodology,
its complexity, the key decision points and the key agencies and committees." McDonald (1982, p. 4) claimed that "the meaning of approvals at various stages and the limitation of these approvals" also pose methodological problems for the developer. Dick and Ringstad (1981, p. 5) reported one problem of the review methods which may have given false expectations to the developers; that is, that "because preliminary screening is not a detailed review in terms of technical aspects," the status of report acceptance was not clear. "Acceptance of initial screening should in no way bias the final decision on [the report's] acceptance in principle" (ibid.).

Another methodological dimension that caused confusion occurred because the preliminary and final reviews were conducted by different agencies and, therefore, varied review approaches were seen as a problem. Crouse (1978, p. 6) noted that "there is a lack of liaison or differences of opinion between and within government agencies which tend to preclude resolution of problem areas." From his observations, he concluded that "there had been a lack of consensus among involved government branches" (ibid.). A factor which caused inter-agency conflict was the flexible implementation of the review procedures. Dick and Ringstad (1981, p. 7) concluded that:

... the administrative approach in formulating reclamation legislation, review and licencing procedures has been to avoid setting firm requirements until investigation and research has been undertaken by the mining
company to determine what must be done to adequately reclaim mined lands.

The methodology for public input was also seen as a problem. O'Riordan (1979, p. 213) indicated that:

... releases of Stage I studies to public interest groups must be undertaken with caution as some people who want to see detailed impact management plans criticize these preliminary assessments as being inadequate. On the other hand, to delay public input until Stage II or III creates a problem as other people desire an input at appropriate stages in the planning process.

Dick and Ringstad (1981, p. 5) noted that the "CDG provided no coordinated approach to valid public input into the decision-making process," and that the "current ELU Act does not allow for public hearings unless called and chaired by ELUC." O'Riordan (1979, p. 212) also identified a need to improve the methods of public consultation.

Most reviewers did not address in detail the question of project appraisal costs although the external reviewers did mention costs. Hawes and Gadsby (1982, p. 2) noted that "the mine manager finds the [CDG] process costly." Crouse (1978, p. 7) suggested that review problems "lead to costly delay." Keevil (1983, p. 5) said cost considerations for locational decisions were expensive and implied that once decided they should not be changed. He also noted that mining interests had concerns about the cost and value of public hearings where, as in the Berger Inquiry, they are "obviously a waste of valuable resources" (1983, p. 7). Keevil's concern was to ensure that regulatory approval
delays did "not result in higher costs," and, furthermore, that "applications for approvals required extensive use of expensive outside consultants, and experts in such things as water courses" (1983, p. 8). Finally, Keevil (1983, p. 13) suggested that the problem with getting all approvals first is that "it can be time-consuming and costly." There was, however, no detailed substantiation for these cost concerns.

Payne (1983, p. 10) offered a counter observation with respect to project appraisal costs. He identified a cost to the province in that "major economic linkages remain quite poorly developed in B.C." Generally, in terms of total national income generated per dollar of value added, the impact of mining was about 45 per cent lower than that of manufacturing, the long-term investment impacts were one third of those of manufacturing, and one fifth in terms of employment (ibid., p. 12). Specific to project appraisal costs, Payne (1983) observed that large resource companies had an incentive—the concentrated nature of corporate cost—and the means to exert strong pressure on government and resist increased government intervention.

6.2.5 Recommendations

Each review contained explicit or implicit recommendations which fell within two categories: recommendations external to the CDG program and suggestions for specific
program changes. Some recommendations involved structural or procedural changes, but none of the reviewers mentioned elimination of the CDG program. Recommendations external to the CDG program were given for several groups of participants, although often the reviewer was not specific as to whom the alternatives were directed.

For the provincial senior government level, Payne (1983) identified two overall recommendations. The first involved both creating public stabilization initiatives with the establishment of a mining community stabilization agency to administer a mining community stabilization fund with development of government approval procedures for major layoffs, and investigation into opportunities for government-supported stock-piling programs and grants to municipalities to improve on-going social stability. The second involved strengthening the entrepreneurial role of the public sector. Payne (1983) recommended studies to assess the possibilities of developing backward, forward, and fiscal linkages associated with mining, for example, through joint-venture or subsidy arrangements for secondary processing. These, Payne declared, should be:

... investigated cautiously, noting possible increased costs of a greater energy demand, opportunities to proceed to an integrated manufacturing base, the environmental consequences of possible activities and alternative uses for that investment resource. (1983, p. 32)

Other recommendations, forwarded by Payne, to the overall goal of capturing economic rent for the province included
the development of backward linkages in mine machinery and equipment, and the creation of four Crown agencies—an exploration corporation to discover and delineate new coal reserves; a development agency to bring new mines to the production stage; a marketing agency to develop and market new related technologies; and a second agency to negotiate export sales in the international market. Another reviewer, O'Riordan (1979), recommended that senior government make policy decisions on the levels of acceptable fisheries management in coal development regions. He also recommended that alternative cost-sharing responsibilities for wildlife management should be examined.

For the agency or working-level of government, Dick and Ringstad (1981) recommended that the MOE should formally object to the loss of ministry environmental management objectives due to coal and exploration development by defining a MOE pathway to decision-makers. They also recommended that agencies have explicit programs for management of identified social values. Keevil (1983, p. 14) said that the overriding societal value held by government review agents should be to "help in the development process." Dick and Ringstad (1981) averred that regional staff/developer communication should be maintained. O'Riordan (1979) suggested regional studies to supplement project-specific assessment, for example, strategic planning for fish and wildlife management. Payne (1983, p. 28) implied that the
official opposition party should devote more attention to
building an effective "political constituency" around
specific, desired changes. The need for improved public
consultation techniques was also emphasized (O'Riordan,
offered a number of changes to the ACR, including specifying its relationship to the CDG program, clarifying its role relative to reclamation planning, decentralizing ACR responsibilities, and making the role of the MAC clear.

For mining companies, Hawes and Gadsby (1982, pp.
11, 12) recommended "adoption of a specific environmental management strategy" characterized by allocation of sufficient planning time for studies, development of an understanding of the CDG process, credibility through good communication and a positive attitude, maintenance of initiative by avoiding communication delays, and ongoing communication with review agencies to minimize surprise. In addition, they recommended that companies develop sound technical, biophysical, and socio-economic programs to integrate environmental and engineering information into a development proposal. This, they suggested, could be accomplished by evaluating the potential environmental constraints early in the (corporate) review procedures. This recommendation was echoed by McDonald (1982) and O'Riordan (1979). Keevil implied a recommendation to companies that the market should be given priority, ahead
of approvals. He also inferred that this strategy should be sanctioned by government.

Recommendations specific to the CDG program administration were largely procedural or methodological. Dick and Ringstad (1981, p. 5) pointed out that the CDG must resolve "who makes decisions and when that decision is made," and, furthermore, that basis for development rejection must be clearly established, as well as a definition of points in the process where rejection can occur. Cost-benefit analysis must be seen, they suggested, as but one tool in the decision-making process. They also recommended that the guidelines must make provision for CGSC review and assessment of any deviations from the originally approved program, including changed or expanded development plans (ibid.).

Dick and Ringstad (1981) went on to suggest that program administration should clarify the meaning of preliminary screening activities and develop a public hearing process similar to EARP. This, they said, should become a part of the input into coal development decisions and could be accomplished by an amendment to the ELU Act or through use of the Enquiries Act. Payne (1983, p. 31) also recommended public hearings, as part of his suggested "General Planning Agreement." This legal agreement would examine development viability in light of other similar provincial projects, establish enforceable environmental and safety
standards, establish levels of procurement, and require government organized recruitment and worker training.

In reviewing the foregoing, it would seem that to enact one set of recommendations would frustrate or act in opposition to the recommendations of others, so it is difficult to determine an exact set of changes for the CDG program. There was no question, however, that the CDG program was at times inconsistent and cumbersome, particularly as it dealt with participant expectations. It was often seen to be inattentive to what seemed to others to be relevant information; thus, the problem in revising the CDG program is that all participants cannot be satisfied. For administrators, program changes become political, moral, and ethical decisions.

This summary, however, does provide insight into the types of indicators and constraints each author felt best emphasized his concerns. It was not surprising that each should argue that changes should be taken to reduce constraints and, hence, facilitate their position or mandate. One final observation may be made: the varied contextual environment created an opportunity for stereotyping of others who did not view the same values as being significant. Comments which illustrate this observation included Payne's (1983, p. 28) remark that "the economic and political power of large private firms makes the formulation of effective policy to implement these goals an
exercise fraught with peril." The result is that the debate may conveniently be seen as one of opposing political polarities.

6.3 Questionnaire

The 60 questionnaire items are reproduced in Appendix D with respondents identified in Appendix E. The data were analysed following procedures described earlier in Chapter 1 section 5.3. This analysis provided evidence for unexpected program outcomes and impacts by enabling identification of attitudes toward eight general program aspects and detailing opinions regarding two significant program aspects.

6.3.1 General program aspects

A series of factor analysis procedures, including correlation matrices and scaled factor scores, enabled this researcher to collapse the items into eight program aspects in the following manner. Correlation matrices were prepared for item sets, chosen on the basis of the CDG program structure. From the correlations, items 1 through 4 were collapsed giving an indication of agreement on the information in the prospectus—referred to as PINFO, and items 5 through 7 were collapsed to give an indicator of agreement for prospectus actions—coded PACTION. Items 9 through 14 were correlated and represented an indicator of agreement for the elements in a preliminary assessment—FIDENT, or
expectations for initial mine planning. Item 12 measured the attitude toward the existence of data gaps. As such, this item was not correlated to the previous items and thus identified a different program aspect—PGAPS. Items 17 through 23 measured expectations for, or a belief in, the ability of the Stage II assessment process to aid understanding of the mine development problem—SIIASSE. Item 20, which measured respondent agreement with evidence of public involvement in contributing to an understanding of the development problem, was correlated with the above items, however, the scaled factor scores showed this item was separate from the others. Because information from public involvement was not used by the CDG program in reviewing mine development, this item was not used as a program aspect.

There was no correlation among items 25 through 28. Because the prospectus was not formally reviewed, these items did not form an identifiable program aspect. Items 29, 31, and 32 measured elements of Stage I document rejection—FCOUNDER. Items 30 and 33 showed a relationship between CGSC negotiations and review satisfaction. The nature of this relationship was such that it appeared to separate aspects of the respondents' understanding of the review in terms of negotiations from their satisfaction with the review. Items 34 through 40 were correlated, and provided a measure of the respondents' attitude toward the
coordination of the Stage II review--SCOOREV. The scaled factor scores for these items provided the basis for a distinction to be made between the respondents' understanding of the economic elements in the review from concerns about document rejection, timing, and approval-in-principle.

Generally, there was no correlation for items 40 through 60, which were related to management alternatives. It was inferred, because these items proposed options not experienced in the current CDG program, that they did not form identifiable program aspects. There were, however, three exceptions. Items 42 and 44 indicated that permitting and licensing were related. Items 55 through 57 were correlated around the issue of information access, and a correlation among 44, 47, and 54 indicated a possible relationship among the activities of obtaining permits and licences, continuing research, and access to information. Despite these exceptions, items 41 through 60 were not used in this analysis to provide indications of respondent attitude toward the program.

6.3.2 A pattern of opinion

These eight aspects were examined further in a cluster analysis which produced the pattern of opinion shown in Figure 15. With this technique, a comparison of respondent aspect scores was made. The scores which were most similar were identified and then treated as one value.
Figure 15 Cluster Pattern of Opinion
Subsequently, the next most similar score was selected until all respondent scores had been compared. Respondents were, therefore, grouped along two dimensions—their relative agreement with the program shown on the horizontal axis and the degree of similarity of scores shown on the vertical dimension; for example, respondents 1 and 16 were most in agreement with the program and also very similar in their opinions.

It was interesting to observe the cluster of individuals in terms of educational background and present career. Most in agreement with the program were trained engineers working either as CDG administrators or successful coal-mine proponents. In contrast, respondents in disagreement with program aspects were those trained as biologists or field scientists working either as review agents or assessment consultants. This finding suggests that some industry representatives and program administrators were in close agreement about the program. Those concerned with biophysical impacts, however, found the program unsatisfactory and yet were dissimilar in their opinion as to the problems. This observation is characteristic of the program.

Program advocates found their opinions very similar while program critics held a variety of opinions as to the changes required. This created an environment of varied concern among participants in the program.
6.4 Interviews: Levels of Concern

Previous analyses of outcomes indicated that participants in the CDG program, or those with some interest in coal development in B.C., differed in their perceptions about the program, with some of these opinions being surprising or unexpected. One might assume that for the CDG to be effective in influencing the coal development planning, the program must be able to influence human and institutional behaviour. Furthermore, this outcome suggests that one of the tasks of the program administrators may be to develop an understanding of human motivation in order to be aware of the varied nature of concerns held by participants. Knowledge of current theories of individual growth and development may have a bearing on this understanding, for as Gelb (1974, p. 52) stated:

... unless we become aware of the unconscious processes which colour our discussions of the environment, we will be unable to effect any necessary change. For all our optimistic (or pessimistic, for that matter) plans for the future are shaded by the fact that it is the nature of our own psyches which is doing the predicting ... if half of our nature (the unconscious mind) is unknown, how can we claim responsibility for any truly rational decisions?

The initial theory that human needs are varied and may be ordered hierarchically comes from Maslow (1964). More recent scholars have developed similar theories; e.g., "levels of existence" (Graves, 1974) and a scale of moral
attitudes. These theorists believe that human nature is not fixed and there is no single set of values or rules by which humans ought to live. They suggested that when a person is focused in one particular state of need, existence, or moral thinking, he has a total psychology which is particular to that state. Thus, the conceptions of management, education, economic and political theory, and practice are fixed within that state. These theories provide a possible explanation for the difficulties observed in communicating, and the information excess which resulted. This difficulty in communication poses particular problems for the CDG program managers because the basis for the CDG is participant and constituent consensus; yet the various perceptions of reality and different value systems are not consistent. Many of these and other more recent theories summarized by Drews (1970) have been used to develop further theories of management and policy-making; for example, one could probably identify stages or levels of concern that individuals may have with the implementation of new, particularly innovative, programs. For the CDG, a problem arose as case-by-case implementation of project appraisal proceeded. Individuals with their different attitudes, feelings, perceptions, and motivations became the surprising or unexpected output of this program. As respondent Dave Poister, an environment consultant, indicated, "there is no real difficulty managing biophysical impacts. The problem
lies in managing people's perceptions of the problem." A further dimension to this problem occurs because individuals' concerns change over time. When first encountering the guidelines, individuals may question their own adequacy or their ability to deal with the CDG program and, therefore, have self concerns. As these are resolved, task concerns surface which focus on their management responsibilities in program participation. Eventually, the issues of concern shift to the impact of the program, where the concepts of planning a coal development in an environmentally and socially conscious manner are important. Again, Polster observed, "in ten or twelve years there have been major guidelines changes." Concepts of environmental preservation, mitigation or compensation, reclamation, environmental and social monitoring, wildlife management, and equitable land or resource allocation, are all implied in the CDG program. These concepts are quite different from the traditional ways of doing business and have influenced the manner in which individuals identify their concerns. Following is a classification of interview comments by type, suggesting the levels of concern participants voiced with the CDG program:

6.4.1 Self concerns

Some respondents initially had little involvement with the CDG program, their concern being to gain experience
with the process. Matheson pointed this out when he noted that "the quality of review comments depends on the experience of agency commentators," and that review agents needed training in planning analysis which should emphasize "a look at extraneous factors, to draw the whole picture." Social agencies had not responded to early review requests because of competing priorities and the projected cost of doing realistic reviews. Because of this, their concerns were to understand the CDG process and how their ministry would participate. The Ministry of Education (MED) representative had no direct CDG concerns because Headquarters did not deal directly with the CDG program or receive staged reports; their only contact with project reviews had been with the NEC. With most education planning done at the regional level, and the limited Headquarters mandate, participation in the process was confusing, but as a result of MED's recent introduction to the review process, the ministry was setting up a working committee with a regional ministry representative to resolve the concerns. This decision raised the problem of the structure of the impact committees, which required coordination of plans and priorities with several local areas, where the regional representative would be faced with difficulties due to the widely varying responsibilities of local authorities.

Some respondents had informational concerns due to the characteristics of the CDG and their requirements. One
respondent found the line between Stage I and Stage II assessments and the mechanisms for Stage I review unclear. He felt that "negotiations should go through the CGSC," and suggested that reasons given for study rejection were not always the real reasons. Other personal concerns arose which suggested that some respondents were uncertain of the demands of the CDG program, and there was a general feeling of ambiguity and not being in full control. Many respondents questioned the rationale for the program in terms of political intent, and others felt that the guidelines were designed primarily to facilitate coal development. The use of the prospectus was uncertain and several respondents felt it was not useful and should be abandoned, while others felt that it was not very useful as it was, but should be retained if its purpose or role were changed.

6.4.2 Task concerns

For many respondents, managing their involvement with the CDG was their primary concern. One respondent indicated that technically and administratively, he would strongly prefer specific regulatory guidelines and approvals in the socio-economic area, and another had concerns regarding resource allocation issues of water management, disposal, drainage, clearage, and their effects on water quality. Although it was observed that bureaucrats managed the resource base, and the agency became the manager, with
respect to agency management, other respondents noted that regionalized authority varied from ministry to ministry. "The Ministry of Mines has not regionalized their authority. The ministry has not recognized the rights of the community to have an input into their future," was a comment by one respondent. Some government resource agencies relied on their field staff to comment on the development. One of these noted his role was not to manage but to support the developers with the provision of inventory data; however, with no restriction on information access, the concern arose about who was to pay for the government to collect inventory information. Management was most often identified as a political issue, with many of the comments focussed on the respondents' immediate sphere of influence, and minor day-to-day problems.

6.4.3 Impact concerns

The impact of the CDG program, because of its flexible implementation, created a different set of concerns which centred around performances, competencies, and outcomes or consequences. For example, administrative costs and apparent information overload, not conducive to efficiency, were cited as program outcomes. The consequences of permit withholdings was another concern expressed by some respondents, while an impact frequently noted was the phenomenon of "moving goal posts." This observation that
the guidelines seemed to change for each application was occasionally attributed to an education-and-acceptance process where "government resource managers were noticing more [about coal development proposals] than when the program was initiated."

A suggested consequence of changing guidelines expectations for each project was that the program's credibility was reduced. This was, however, not a consistent assessment. One respondent felt that any loss of CDG credibility was more implied than real. Some respondents noted that the success of the program hinged on the ability of the chairman to balance the concerns, with the focus of these respondents' observations on the need for coordination and cooperation with others regarding the use of the guidelines.

A few respondents directed their comments regarding program impacts toward the broader benefits occurring as the program had been implemented. One suggested that major program changes were necessary, with a need to streamline the process based on a sense of trust. This respondent felt that with a sense of trust on both sides a project could be developed in a way that controversy could be eliminated early and that details could be left until Stage III.

Through the three methods used to examine program outcomes--evaluating existing program critiques, analysing questionnaire results, and classifying individual interview
comments—a repeating pattern emerged. The expected program outcome of carefully planned coal mines was not the only program result. The wide range of differences in individual attitude and belief has created an unexpected outcome, in that the continued operation of the program is threatened and its credibility is questioned. To deal with this unexpected outcome, major changes to the guidelines seem necessary and inevitable. Appropriate choices to effect program changes, to resolve individual concerns and program credibility, become the task.
Adequacy and Utilization

Environmental concerns are now often dealt with in a fixed review of an independently designed policy. We argue that this reactive approach will inhibit laudable economic enterprises as well as violate critical environmental constraints. We offer, as an alternative, the process of adaptive environmental management and policy design, which integrates environmental with economic and social understanding at the very beginning of the design phase and after implementation.

- Holling (1978)

7.1 Conclusions: Program Adequacy

The foregoing analyses indicated that the conduct of the CDG program has not automatically ensured that knowledge of environmental or social impacts will be integrated into project appraisals and, hence, into decisions. Nor has the program ensured that managers would have the necessary understanding or authority to incorporate biophysical, social, technical, and economic considerations into the policy, planning, and implementation of coal-development decisions. In this respect, analysis of the CDG program profile, actions, and outcomes revealed that the operation of the program has been neither rational nor comprehensive.
This assessment, however, does not address the matter of adequacy of the program in terms of its usefulness for social planning. This chapter provides a review of the findings, with suggestions for program alternatives and options open to participants in the CDG program, as well as the implications of these suggestions.

7.1.1 Program profile: policy design and decisions

Analysis of the political, historical, and institutional evidence suggests the following conclusions. Occurring as they do with a coal-development policy framework, the objectives of biophysical, technical, and social agencies appeared to receive only working-level attention when compared to the attention from senior government devoted to the achievement of economic objectives. Despite historical experiences associated with coal, development decisions were based on a drive to achieve economic goals, while social and environmental concerns were to be added later or subsequently examined in the project appraisal process.

The outcome of this separate-policy approach which favoured economic development was increasingly to restrict the adequacy of, or circumvent entirely, the project appraisal process. Achievement of CDG program objectives was severely limited by the policy context, particularly when dealing with complex social issues. Holling (1981) stated that, even if a range of objectives is incorporated
into an assessment and review program—or into a development proposal—from the very beginning, irrelevant conflict with minimal learning ensues. In the long run, the outcome of this approach will be designs which are too costly and benefits which are too sensitive to the unexpected. With reference to B.C. coal development, Holling's (1978) observations may be realized despite the fact that the guidelines were designed with broad objectives and appeared to be implemented in an adaptive manner.

Specifically, the North East Coal Development appeared to have circumvented the CDG program design. As a result, implementation of this project and related developments threatened to be so costly in a provincial budgetary sense that many social and environmental programs have been affected substantially in 1983 provincial budget cuts. Subsequent and indirectly induced impacts may generate even greater costs than were predicted, with the consequence that environmental and social problems, hence costs, may be exacerbated, while the unexpected decrease in the world price of coal means that the expected benefits from this project may not fully be realized. This may result in what once might have appeared to be a sound economic enterprise becoming an economic disaster, with serious additional losses to other non-economic areas.

This situation occurred despite the coal and other guidelines which were designed to be rational and
comprehensive, and to provide the information needed to avoid these problems from the outset. The CDG program was to act only to inform decision-makers. This designated action seemed appropriate according to democratic principles where the decision-makers were expected to obtain information, yet remain free to form their own judgements. It followed that the effect of the guidelines information on political decisions was never expected to be certain. To reduce the uncertainty, when the ELUC Secretariat existed, environmental and social considerations were dealt with by an inter-agency institution with decision-making procedures clearly described. The move of the CDG program to MEMPR, upon disbandment of the ELUCS, should not have constrained the program if the designated decision-making procedures had continued. For several coal projects, the CDG administration did continue to act as the only interface for communication among the coal developer, his consultants, other resource and social agencies, and senior government ministers. For some coal-development decisions, however, reality was quite different and alternative information-generating and decision-making procedures operated. Parallel planning procedures were used by CCED to make provincial economic decisions, to facilitate regional development planning, and, specifically, to study and implement the NECD project. While these differences in policy design and decision-making procedures affected the CDG program, they
were outside the control of the program's administration.

In the context of policy, senior government continues to wield the ultimate authority for setting direction, and there are several policy-design and decision-making options available vis-à-vis the continuation of the CDG program. Senior government could direct that the CDG program be modified, with the program's scope and appraisal expectations reduced by objectives which would minimize assessment requirements and modify review procedures, with the result that the CDG program would more closely fit with a favourable coal-development policy. Alternatively, senior government could add to the project appraisal procedures by directing the integration of environmental, social, and economic policies. This would require substantial cooperation among resource agencies at several levels and would have to be carefully orchestrated, perhaps by an interministerial team.

7.1.2 Program actions: adequacy of the assessment and review

An examination of the CDG's actions in the three cases has suggested that adequacy of the program has been mixed. Overall, there was a marked improvement in the quality of assessment and review documents. An evaluation of document authorship and, hence, responsibility for document content showed that there were choices available to the proponent when preparing assessment reports. From
the cases examined, the most adequate reports were those authored by an in-house corporate team, using external consultants for specific issues. If environmental and social statements of corporate policy reflected a genuine commitment, then this corporate team had access to, and participation from, senior management throughout the assessment preparations. In contrast, there were no alternative approaches used by government to author review documents, which were always authored by individual review agents and coordinated by CGSC administration. Responsibility for the review document's content assumed concurrence from senior cabinet-level decision-makers. In the three cases examined, senior government did appear to support the positions taken by the CDG program administrators, but individual agency review comments were not always supported by the responsible minister.

If senior government is committed to achievement of social and environmental objects through project appraisal processes, three program alternatives associated with authorship are suggested. First, senior cabinet ministers could participate actively in each mine appraisal. This implies a large time commitment on the part of each minister but would facilitate communication among the proponent, all levels of government, and program administrators. To reduce the time commitment, ministerial involvement could be limited to participation in a short workshop which would
initiate each proposal. With this approach, the decision to approve the project could come at the outset of project planning but after a period of multi-interest discussion and development simulation. With corporate and government decision-makers involved at the outset, they would not be informed after much of the planning had proceeded and consistent decisions might result. Alternatively, greater decision-making authority, possibly through changed legislation, could be decentralized to those agencies and individuals conducting reviews. A third alternative could be the formation of a project-specific review team, struck for each project and staffed with both government and corporate representatives to coordinate and facilitate each appraisal. This team would function to ensure that the probing, learning, experimentation, and necessary change is successfully communicated to those concerned.

Observations of project and document timing showed considerable variation among the three cases. Evaluations of adequacy in terms of the time involved for task completion or for consistency, revealed that the program is inadequate. Evaluation of the three cases showed, however, that the time required to complete the review itself was not a delaying factor. Uncertainty with other elements of the program—such as government expectations for purpose, methodology, and report sequencing—were responsible for some delays. Corporate uncertainty and inexperience were the
exogenous factors which contributed to project appraisal delay.

Clarification of assessment expectations by program administrators could reduce uncertainties in timing. Numerous program alternatives could also be examined to achieve greater efficiency; for example, document expectation could be standardized. One implication of reducing timing uncertainty through standardization, however, is that program flexibility would be reduced. To shorten corporate time delays, anticipation of the range of possible uncertainties, and planning to reduce them as much as possible through constant communication with the review and permitting agencies, is one alternative.

A judgement of mixed adequacy was reached when the statements of purpose were evaluated in the case study documents. The guidelines described expected purposes for each formal document, implying a totally rational and comprehensive methodology, where all possible outcomes of each proposed development were to be considered. It was obvious, however, that proponents' formal documents contained descriptions of purpose which limited the documents' content and methods. Frustrated expectations for comprehensiveness existed because proponents could not meet total rationality largely because it was impossible to foresee all development impacts. Although each project and site had unique features, coal projects--indeed, most mining projects--had
environmental, social, and economic systems which faced somewhat similar disturbances. Findings of the physical, biological, and social sciences, as well as from specific B.C. mining experience, have allowed an accumulation of a rich, descriptive, and functional body of literature which identifies the nature and possible outcomes of mining disturbance. With this information, some studies are now redundant, and each project faces a situation where adaptive not comprehensive project assessment and review has become more feasible.

Improvements to the adequacy of the CDG program are available to the administrators through a revision of the rationale or purpose, based on the experience of past appraisals. The current program could first be clarified with aspects of selective risk-taking, rather than impact identification, as the focus of the program design. This alternative would require a description of purpose which emphasizes flexible project design as well as adaptable government review requirements. In addition, project design choices could be valued explicitly to predict possible consequences. There is one implication, however, to changing the rationale or purpose for the CDG program. In the past, in attempting to implement integration of environmental and social concerns with project planning in a rational, comprehensive manner, the process had generated considerable idealistic momentum. An altered program emphasis might lose
this direction.

An evaluation of document format showed that, for this feature, improvement over time in appraisal documents was most noticeable. It was concluded that the format of the formal Stage II reports was always adequate, but the informal documentation was generally not well presented. Recognition by proponents that inter-agency reviews involve a variety of readers and that a format designed to meet their needs would facilitate their position, was one conclusion that came from this evaluation, but to facilitate the usefulness of the documents, the proponent needs to know who will conduct the review and what are the review criteria. Program administrators could clarify the review procedures in a revised guidelines description which would incorporate existing practice. For example, it was observed that, because the proponent faced the problem of providing reports that were manageable in preparation and yet met the changing demands of government, different strategies were used. Preparation of several draft documents and an initial CGSC screening was one approach used to improve the format. Proponent meetings with information briefs which supplemented the required documents, and corporate meetings with specific review agents arranged to ensure an acceptable report format, were other techniques used to aid communication.

Under the existing program, several options were
utilized by the proponent when formatting assessment information, and specific observations of format alternatives led to the conclusion that assessment and review documents were enhanced by an accurate summary and generally well-presented graphics. In addition, the separation of biophysical from socio-economic analyses had the advantage of directing information to those review agents who were most responsible, yet created a disadvantage because an integrated overview of impacts was never provided. Finally, because coal development is technical in nature, all documents should have included a glossary of specific terms.

The format of government review documents improved over time. Often the compendium of comments was preceded by a letter from the CGSC summarizing major concerns. This later evolved into a summary statement of relevant concerns and included a table of contents. A disadvantage to this format emerged, however, because the summary was thought to focus proponent effort on those issues which were highlighted while other concerns did not appear to receive similar attention.

In addition to clarifying the formal expectations, the program administration has several choices when providing directions for the preparation of assessment documents. Standardized reporting formats could be prescribed in which each review agency provided content lists and methodological expectations. These could be coordinated and summarized in
a revised CDG program document, perhaps similar to the guidelines formulated by the Alberta Energy Resources Conservation Board (1978). Alternatively, the current ad hoc approach to document format which encourages proponent experimentation could be retained, with the result that uncertainty would remain for the proponent over the possibility of expanding document expectations.

From the three cases examined, it was concluded that methodology was the most problematic feature. A rational and comprehensive method requires consideration of all factors potentially associated with the development so that logical, sequential planning may proceed. The current guidelines provided no system for prioritizing the issues to be assessed; therefore, long-range forecasts of expected production and employment were provided first, thus tending to emphasize benefits over costs. While much of the process required prediction, the problems associated with forecasting were never addressed. There are limits to predictability, and predictions are generally insensitive to value implications. Suggested methods to handle these problems were never provided by the program administration. Therefore, most assessment documents were dominated by comprehensive lists of species, soil conditions, and geological parameters as an assumed necessary first step in impact prediction, and often these descriptive data were uninterpreted. The assessment methodology did not deal with
impacts which might occur independently of the specific development, or with cumulative or long-term consequences, nor were causal relationships affecting both societal and environmental systems adequately described. Because of this limited assessment methodology, the predicted benefits of increased employment and value from production appeared greatly to outweigh the identified impacts.

Because the appraisal methodologies were not designed to question the limitations inherent in their analyses, two situations arose. First, the review aspects became fundamentally asynchronous with the assessment aspects, despite suggestions to the contrary (Hawes and Gadsby, 1982) in that the assessments, by not identifying inherent limitations, left the review process to pointing out their weaknesses and, as a consequence, the document had to be redone in an iterative rather than a coordinated fashion. Second, the review process did not include a methodology to re-integrate findings after the individual reviews had been conducted. The method used was basically reductionist, where each specialist or expert evaluated only separate technical, social, environmental, or economic aspects of the project and, while the review appeared comprehensive, a technique for bringing the impacted dimensions together was never specified. Again, because of this approach, total impact costs were underestimated, and benefits determined through the confidential cost-benefit
modelling method were overestimated. For the three cases evaluated, forecasting became an instrument of persuasion rather than an objective analytic method, in part because the authors had not clarified their assumptions or the limitations of their predictive techniques.

Options are available for the program administration to address these problems. The proponent could be encouraged to adopt different methodological approaches—ones which aim at integration of various elements from the beginning, and emphasize learning under conditions of uncertainty rather than total impact prediction. For example, alternative analytic assessment methodologies are available which use scenario generation, matrices, or systems-modelling as techniques. Information-processing systems offer alternatives in terms of information analysis, and valuation of predicted effects could be collected from citizens or local communities.

Changes are also possible outside the appraisal process; for example, the proponent could be encouraged or directed to consider environmental and social information early in the corporate feasibility procedures. Specifically, exploration could be required which would include preliminary site examinations for environmental constraints as well as geologic potential. The proponent could then be asked to monitor conditions from the outset which would facilitate early planning of corporate, environmental, and
social policy alternatives. If a project then appeared feasible to the corporation, the prospectus and preliminary assessment phases could be collapsed, perhaps into an interactive workshop. At this time, corporate and political leaders, as well as local interest groups, could meet with consultants and review agents to determine the overall desirability of the project. If the project could be evaluated in general, based on this period of interactive group assessment, an agreement could be drafted which would set out the project-specific requirements for a detailed assessment study.

Finally, an evaluation of the document content produced further conclusions of mixed adequacy, although some content characteristics were consistently adequate for the documents examined. For example, the formal assessment documents always included a description of the proposed development plan, with the level of planning detail increasing as the project appraisal proceeded. In general, these descriptions provided useful information about what was being planned and assessed. The baseline situation was usually adequately described in terms of biophysical conditions, and all told the data were useful for designing the monitoring and reclamation programs for the predicted biophysical impacts. The interaction of the development with the socio-economic base was more problematic, and was therefore not as clearly presented. Recommendations from the
assessment in terms of mitigative opportunities and altered development designs were not always clearly a part of the document's content.

The content of the review documents relied to a significant extent on the original assessment document, and was largely reactive. Some proactive content was provided in terms of information intended to notify the proponent of additional government planning or management concerns, but in some review documents, redundant or conflicting information made the content inconsistent. The review documents were dominated by technical development-plan analyses, with biophysical content the next most common feature. Reviews of the social assessments were a less significant part of the content, while economic review content was never presented.

Because the guidelines did not clearly delineate an expected content, the program administration could consider revisions to the CDG description through defining technical as well as social, environmental, and economic information requirements. These revisions could be based on experiences of past appraisals as well as similar guidelines which exist in other jurisdictions; however, revisions of this type would result in a much larger program document and might increase perceptions of government over-management. A different administrative option would be to streamline the existing guidelines description by retaining current assumed
understandings, and reducing specific content requirements, both of which would enhance the program's flexibility. This would do nothing, however, to relieve proponent anxiety over the uncertainties of changing expectations.

The foregoing analysis has illustrated that the coal development guidelines program required extensive formal and informal communications. These were case-specific, and varied as experience was gained. While many of the program actions were adequate, some were not, and changes to the program appear necessary. Whatever changes are made, however, this writer believes they should emphasize choice identification rather than elimination of uncertainty. What must be acknowledged from the cases examined is that the planning and development of coal mines was the result of a number of sequential decisions; hence, production of comprehensive, rational documents was never achieved. Instead, the focus of appraisal communications should be toward alternative option-generation and risk assessment.

7.1.3 Program outcomes: expected and unexpected results

An analysis of expected program outcomes, as shown by the number of mines which proceeded through the program successfully to achieve approval-in-principle, did not sufficiently indicate the adequacy of the CDG. Evidence from program critiques, and responses to the questionnaire and interview, indicated there were numerous unexpected
outcomes which together produced a more accurate assessment of the program, as the following summary illustrates.

A formal evaluation of the CDG program had never been conducted, but several critiques had been written by observers who were both internal and external to the program. Six of these critiques were based on the critics' personal experiences, and they described the guidelines, observations of the surrounding coal development, context, and made findings and recommendations for desired program changes. The external critics tended to emphasize the problems of the review or approval elements of the program, while internal critics focused on the deficiencies of the assessments. Because of this, expectations varied regarding the nature of the decision-making arrangements. Exogenous contextual constraints were identified which affected coal development and, hence, the CDG program, and included international and provincial economic concerns, environmental and social issues, provision or otherwise of public involvement, regional government planning, corporate development planning, corporate feasibility studies, and provincial institutional arrangements. Judgements of program effectiveness varied among the program critics, with the majority of the authors concluding that the program was sound but not without problems. Their findings relative to the CDG were generally critical, and concerned the time involved, cost, lack of bureaucratic consensus, study
parameters, implementation and methodological problems, and problems of understanding. Recommended changes included adding provisions for public consultation and improving or altering the sequencing of program elements.

Analysis of the questionnaire responses further supported the observation of a range of judgements for the adequacy of the CDG program. There was a divergence among respondents on overall agreement regarding eight aspects of the CDG program. Two aspects identified as significant indicators of respondent attitude were the coordination of the review procedures and the preparation of assessments but, again, there was no consensus. The observation of appraisal dichotomy where assessment aspects were separate from review aspects was supported in the findings from both the written critiques and the case study documents.

Analysis of the comments obtained in the interviews indicated that there were numerous concerns relative to the program. This led to the conclusion that the CDG program as implemented had concentrated on the aggregate process and had not taken into account the wide range of individual attitudes and concerns. When the types of concerns were examined through preparation of a participant profile, the conclusion of differing perceptions about the program was reinforced. The analysis showed, as well, that interdisciplinary appraisal programs, such as the CDG, faced characteristic problems of participant uncertainty and, hence,
dissatisfaction. This range of opinion gave rise to dissent and produced a dilemma for program administrators. The individuals who advanced conflicting perceptions were often seen to have retreated into stereotyped positions. This resulted in pressure from several quarters which limited the program's possibilities for flexible appraisal of particular mine developments. This may have meant that continued implementation of the program on a case-by-case, ad hoc basis had aggravated the observed concerns. Therefore, any program change should be viewed with these conclusions in mind, and if changes are made they should be minimal and carefully communicated. The program administrators should probably retain as much of the existing understanding and program structure as possible. The questionnaire used in this study, if revised, could, perhaps, be developed as a tool to be used for on-going program evaluation, where monitoring participant attitudes could be used to determine the impact of new program changes.

Further efforts by the program administrators could alleviate individual concerns through educational activities. Seminars for participants conducting environmental, social, and economic assessments may be useful. The range of possibilities in assessment methodology could be clarified relative to the program's intent, and orientation sessions for government personnel new to the review process, or for companies unfamiliar with the appraisal process,
could be another action designed to alleviate the concerns. Public information brochures providing details of the guideline procedures, identifying routes to gain access to development plans and government reviews could be prepared and, finally, proposals could be explored to improve communication through educational techniques such as interactive workshops.

7.2 Recommendations: A Utilization-based Evaluation Study

The wide range of choices previously identified for senior cabinet ministers and program administrators with regard to revising the CDG program suggests that revisions will be difficult. Choices could be facilitated, however, if a utilization-based evaluation study were conducted prior to program revisions. A successful study has several prerequisites, including well-defined terms of reference and a commitment by those who commission the study to utilize the results. Utilization could best be assured by designing input from decision-makers into the study and continuing to obtain their opinions throughout the evaluation. To do this, the study would require full, senior-level cooperation.

Specifically, prior to CDG program revisions, resolution of the generic issues of program rationale, current cost-effectiveness, and program alternatives should form the expected output of the recommended study. These findings
could be viewed as an aid to decision-making and management in government by involving the systematic gathering of information and evidence on the CDG program within MEMPR and the ELUC.

Program rationale, the first issue requiring evaluation, should be examined to determine if the formal descriptions are still relevant. Statements in the Guidelines for Coal Development (B.C. ELUC, 1976) should be reviewed and draft recommendations produced for revisions which would clarify current understandings. In addition, the rationale should not be examined in isolation but be evaluated in terms of its role as a model for other government appraisal guidelines. Thus, this study design should include comparisons among other B.C. guideline procedures.

Information on program costs should be collected. Several representative cases in terms of time and range of issues should be examined to determine the approximate costs of government involvement in their appraisal. Cost information from coal companies should also be sought. This information is necessary before cost-effective alternatives for delivering the program can be considered.

While an in-depth, thorough analysis of program alternatives would be an asset to administrators, it is not recommended that such an analysis be a part of the study. Instead, promising alternatives could be identified which could be examined further by an appropriate inter-agency
planning group.

A program evaluation advisory committee should be established to manage the study, chaired by the staff of the CGSC. External consultants may be utilized to provide specialized expertise. Deputy ministers should be involved with the advisory committee, with the findings presented to senior cabinet.

7.3 Further Academic Research

A number of areas of academic research have arisen from this work, and seven possibilities are listed below:

1. Because there is international interest in the B.C. program experience in energy resource planning, similar public-sector decision-making processes could be compared in other jurisdictions. An appropriate theoretical framework would precede such a comparison.

2. A more detailed understanding of the existing legislative arrangements for energy development could be prepared, using the broad range of agency involvement described in this study.

3. Ongoing analysis of Japan's energy strategy with implications for coal developments (existing and proposed in B.C.) might be conducted in light of both the CDG program and the actions of MISBD.

4. An examination is needed of alternative
appraisal methodologies, particularly for forecasting development impacts and evaluating assessments.

5. Detailed information could be documented of the North East Coal project's decision-making procedures and the project's outcomes.

6. A more analytical study might be undertaken to investigate the contribution played by previous education and experience in determining an individual's view of his role in interdisciplinary government resource management programs. This could be done with the objective of identifying ways to improve the consultations and coordination necessary for group collaboration.

7. Addressing the issue of how to facilitate group and social learning processes, essential to resource planning and management, provides another important area for future study.

7.4 Summary

The following provides a summary of the research findings condensed into point form:

1. From the program profile the program appeared to be inadequate because:

   (a) economic policy objectives were paramount to senior B.C. government decision-makers, therefore, program objectives were constrained;
(b) the planning and implementation of the north-east coal development circumvented the CDG program design;
(c) parallel planning procedures and institutions, particularly the CCCD and MISBD limited the ELUC, the Secretariat, and the CDG program, and ultimately the expected decision-making process.

2. From the actions of the program a judgement of mixed adequacy was reached because the program was administered in an ad hoc, flexible manner, allowing a range of approaches for document preparation:

(a) Documents were authored in a variety of manners some of which did not assure a corporate commitment to content or to utilization of conclusions,
(b) Timing of project planning varied. Delays were often due to external factors rather than program requirements, yet the program was often held responsible.
(c) The purpose for the various phases was confusing with developers pursuing approval and reviewers seeking problem identification and solutions. The lack of a clear rationale for each phase resulted in a set of information requirements which seemed continually to expand.
(d) Document format was variable with some more successful than others. Most tended to emphasize
biophysical information.
(e) Assessment methodology was often inadequate because of the limitation of forecasting techniques, lack of data analysis, and failure to identify inherent assumptions.
(f) Document content showed increasing comprehensiveness and was often more than adequate.

3. From the outcomes of the program, an evaluation of mixed adequacy was reached because there was a surprising variety of opinion and type of concern.
(a) Seven written critiques existed which included recommendations for changes to the program.
(b) There was no consensus as to which changes would be most adequate; however, there was never any suggestion to eliminate the program.
(c) Contexts were provided for program problems, including the international economic climate, provincial economic considerations, and environmental, social, institutional, and public involvement issues.
(d) Concerns with the program ranged from personal to task or management to impact issues.

4. The continued operation of the guidelines as originally described is in question. If it is to remain viable, an utilization-based evaluation study is needed wherein the rationale, costs, and alternatives should be examined before more changes are made.
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APPENDICES
APPENDIX A

COAL DEVELOPMENT GUIDELINES DOCUMENT
EVALUATION QUESTIONNAIRE
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<td><strong>C. Purpose</strong></td>
</tr>
<tr>
<td>Document user/use</td>
</tr>
<tr>
<td>For proponent documents</td>
</tr>
<tr>
<td>a. General public's information ( )</td>
</tr>
<tr>
<td>b. Assessors of alternatives ( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference (Section/Page)</th>
<th>Assessment (Yes/No/Not Known)</th>
<th>Comments &amp; Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

COAL DEVELOPMENT GUIDELINES DOCUMENT EVALUATION QUESTIONNAIRE

CDG's required purpose for this document

Documents statement or terms of reference

287
c. Overview of baseline conditions for government planners ( )

d. Government approval ( )
e. Resource managers preparing for impact mitigation ( )

Document user/use
For review documents

f. Check on adequacy of information base for proponent and consultants ( )
g. Develop terms of reference for further consultant studies ( )
h. Identify terms and conditions which restricts proponent's approval ( )

---

D. Format

a. Overall

1. Numerous volumes
2. Separate summary
3. Collection of comments
4. Comments organized by topic
5. Comments organized by agency
6. Summary of outstanding concerns

b. Detailed table of contents

1. Stated purpose reflected
2. Key sections of report indicated accurately

c. Report body

1. Presentation of integrating technique
   - C/b analysis
   - Quantification to a common metric
   - Socio-economic impact matrix
   - Verbal summaries
   - Environment impact matrix

2. Assumptions are identified

3. Intangibles are identified

4. Constraints are identified

5. Manner of development information presentation

6. Manner of impact information presentation

7. Manner of methods presentation

8. Manner of conclusions or recommendations presentation
   - Implementation plans are identified
   - Opportunities for mitigation are identified

d. Glossary of terms

e. Graphics
   1. Maps/figures
   2. Tables
   3. Appendices
E. Methodology

a. Methods design
   1. Overall methodology is designed to achieve stated objectives
   2. Methods are identified

b. General data type
   1. Primary data
   2. Secondary data

c. Data sources
   1. Statistics Canada (federal) ( )
   2. Technical/academic references ( )
   3. Provincial government studies ( )
   4. Other companies ( )
   5. Local information (community sources) ( )

d. Data gaps are identified

e. Prediction analyses
   1. Claims are supported
   2. Confidence of predictability is presented
   3. Predictions are distinguished from values

f. Forecasting and prediction techniques are comprehensive
1. With project  
2. Without project  
3. On populations
   - Human  
   - Wildlife  
   - Fish  
   - Vegetation  
   - Matrix analysis  
   - Project checklists  
   - Trend analysis  
   - Systems modelling  
   - Sensitivity analysis  
   - Scenario building  
   - Bioassays  
   - Reclamation studies  
   - Extrapolation

G. Manner in which government review is conducted

F. Content

a. The development plan

1. All phases are planned for
   - Exploration  
   - Construction  
   - Operation  
   - Shutdown
2. Technical planning includes
   Mine site
   • Method
   • Waste dumps
   Plant site
   • Preparation plant
capacity
   • Other facilities
   Transportation, storage,
power, loading

3. Economic planning includes
   Production rates
   Market arrangements
   Employment needs

4. Environmental planning includes
   Reclamation plans
   Unique considerations

5. Social planning includes
   Community impact miti-
gation policies
   Manpower management
   planning

6. Mine plan allows for future expansion
   Mine life
   Reserves

7. Procurement information
b. The environmental setting

1. Impact categories are considered comprehensively
   
   **Biophysical**
   - Physical environment ( )
   - Aquatic ( )
   - Terrestrial ( )

   **Social**
   - Land tenure ( )
   - Community services ( )
   - Cultural ( )
   - Environmentally based social ( )

   **Economic**
   - Linkages ( )
   - Multipliers ( )

2. Systems effects
   
   - Local effects (on site) ( )
   - Regional effects ( )
   - Provincial/federal/international effects ( )

3. Impacts are classified
   
   - Magnitude ( )
   - Cumulative ( )
   - Positive v. negative ( )
   - Temporally ( )
c. Corporate responsibilities re impacts
   1. Opportunities for mitigation/compensation are identified
   2. Implementation is planned for

d. Alternatives for development planning
   1. To meet social goals
   2. To meet future possibilities

e. Recommendations for further action
   1. Conflicts or contradictions with earlier statements
   2. Further planning issues identified

f. Approvals received
II SUMMARY OF SECTIONS AND ASSESSMENTS

<table>
<thead>
<tr>
<th>Comments</th>
<th>Overall Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Authorship</td>
<td>1.* 2.†</td>
</tr>
<tr>
<td>B. Timing</td>
<td>1. 2.</td>
</tr>
<tr>
<td>C. Purpose</td>
<td>1. 2.</td>
</tr>
<tr>
<td>D. Format</td>
<td>1. 2.</td>
</tr>
<tr>
<td>E. Methodology</td>
<td>1. 2.</td>
</tr>
<tr>
<td>F. Content</td>
<td>1. 2.</td>
</tr>
</tbody>
</table>

*1. = Inadequate
†2. = Adequate
APPENDIX B

APPRAISAL DOCUMENTS: LINE CREEK, GREENHILLS, AND SUKUNKA
APPRAISAL DOCUMENTS

Line Creek


*Note: Parenthetical note preceding each source refers to notation system used in Chapter 5.
Greenhills


Sukunka


APPENDIX C

CONTENT ANALYSIS CODE FOR WRITTEN CRITIQUES OF THE CDG

300
CONTENT ANALYSIS CODE FOR WRITTEN
CRITIQUES OF THE CDG

01: CRITIC'S RELATIONSHIP TO CDG PROGRAM

0101 Internal/external to government review process
0102 Organizational affiliation (e.g. type, location)
0103 Role with CDG (e.g., proponent, review agent, administrator)

02: CRITIC'S PRESENTATION OF FINDINGS

0201 Evaluative methodology
0202 Purpose of critique
0203 Dissemination of results
0204 Substantiation/references/source

03: CRITIC'S DESCRIPTION OF CDG PROGRAM

0301 Nature or kind of program
0302 Expected purpose of CDG (identified objectives)
0303 Government decision-making

04: CRITIC'S DESCRIPTION OF SURROUNDING CONTEXT

0401 Political
0402 Environmental
0403 Social
0404 Economic
0405 Corporate
0406 Effects of context on CDG

05: CRITIC'S FINDINGS RELATIVE TO CDG PROGRAM

0501 CDG's overall effectiveness
0502 Timing
0503 Methodology (e.g., appropriateness, data collection, quality)
0504 Cost

06: CRITIC'S RECOMMENDATIONS

0601 CDG revision generally
0602 External to CDG
0603 Program-specific suggestions
0604 Expected impact of recommendations
APPENDIX D

QUESTIONNAIRE: EVALUATION OF THE COAL DEVELOPMENT GUIDELINES
QUESTIONNAIRE: EVALUATION OF THE COAL DEVELOPMENT GUIDELINES

Please circle the number that you feel best describes your perceptions at this time.

ASSESSMENT

The CDG program is designed as a "staged" process with reports from the proponent becoming increasingly more specific as project planning proceeds.

1. Prospectus

The objective of the prospectus is to provide a general description or identification of the project. With respect to your experience:

- the prospectus aids you in your initial (feasibility) planning.

[1] strongly agree ________________________ strongly disagree

1 2 3 4 5 6 7

(a) it aids in flagging biophysical sensitivities (water quality, wildlife).

[2] strongly agree ________________________ strongly disagree

1 2 3 4 5 6 7

(b) it aids in identifying socio/economic issues (manpower training, housing needs).

[3] strongly agree ________________________ strongly disagree

1 2 3 4 5 6 7
(c) it aids in identifying infrastructure needs (new roads, town sites).

[4] **strongly agree**  _______________________ **strongly disagree**
1  2  3  4  5  6  7

- Field studies should be started immediately after prospectus submission.

[5] **strongly agree**  _______________________ **strongly disagree**
1  2  3  4  5  6  7

- Planning for an environmental management strategy (e.g. reclamation) should begin at the time of prospectus submission.

[6] **strongly agree**  _______________________ **strongly disagree**
1  2  3  4  5  6  7

- Allocation of personnel and funding for Stage I studies/reviews should be done at the time of prospectus submission.

[7] **strongly agree**  _______________________ **strongly disagree**
1  2  3  4  5  6  7

- The prospectus as a stage should be retained.

[8] **strongly agree**  _______________________ **strongly disagree**
1  2  3  4  5  6  7

2. **Stage I Report**

The objective of this report is to provide a preliminary assessment of impacts. With respect to your perceptions of this stage:
Development program impacts are adequately identified.

[9] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7

Mine plans are adequately conceived and presented in this report.

[10] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7

Existing inventories (1:50,000) and baseline data (i.e. water quality and ambient air data) are appropriate.

[11] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7

Data gaps are well identified (i.e. between existing data and information necessary to assess impacts).

[12] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7

Environmental study programs are clearly designed to fill data gaps.

[13] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7

Possible alternative solutions to the problems identified are adequately provided.

[14] strongly agree ____________________ strongly disagree
1 2 3 4 5 6 7
Prospectus and Stage I reports should be consolidated.

[15] strongly agree ___________________________ strongly disagree
1 2 3 4 5 6 7

The Stage I report is an appropriate tool for preliminary assessment and should be retained.

[16] strongly agree ___________________________ strongly disagree
1 2 3 4 5 6 7

3. **Stage II Report**

The objective of this report is to provide detailed plans for managing (resolving) environmental problems. From your experience with this stage:

- The mine plans are sufficiently detailed in the report to allow for adequate assessment of the environmental impacts.

[17] strongly agree ___________________________ strongly disagree
1 2 3 4 5 6 7

- Site-specific impacts for all elements of the proposed development are adequately identified.

[18] strongly agree ___________________________ strongly disagree
1 2 3 4 5 6 7

- Alternative mitigation proposals for the identified impacts are adequately presented in this stage.

[19] strongly agree ___________________________ strongly disagree
1 2 3 4 5 6 7
Evidence of public interaction is adequately shown in these reports.

[20] strongly agree __________ strongly disagree
1 2 3 4 5 6 7

A reasonable plan of action for managing the identified impacts is provided in these reports.

[21] strongly agree __________ strongly disagree
1 2 3 4 5 6 7

Monitoring programs for construction and operation phases are designed in detail and presented in the Stage II reports.

[22] strongly agree __________ strongly disagree
1 2 3 4 5 6 7

The Stage II report successfully provides plans to resolve environmental problems.

[23] strongly agree __________ strongly disagree
1 2 3 4 5 6 7

This staging process (prospectus, Stage I, Stage II) reduces the assemblage of irrelevant data.

[24] strongly agree __________ strongly disagree
1 2 3 4 5 6 7
COORDINATION

The CDG do not spell out as clearly as the staged reporting procedures, the coordinated review process. The CGSC is the major body conducting the coordinating activities. Review comments by government agencies are produced and passed onto the proponent but much negotiation also takes place. From your perspective:

1. **Review of the prospectus** (no formal review is produced):
   - Adequate review information is generated/provided.
     
     [25] strongly agree  ____________  strongly disagree
     1 2 3 4 5 6 7
   
   - The time required for this review is reasonable.
     
     [26] strongly agree  ____________  strongly disagree
     1 2 3 4 5 6 7
   
   - The feasibility of a project is adequately determined by this informal review.
     
     [27] strongly agree  ____________  strongly disagree
     1 2 3 4 5 6 7
   
   - The coordination of this review is satisfactory.
     
     [28] strongly agree  ____________  strongly disagree
     1 2 3 4 5 6 7
2. **Review of Stage I** (review comments, CGSC negotiations):

- The mechanism for review of this stage is clearly understood.

[29] **strongly agree** \[\_\_\_\_\_\_\_\_\_] **strongly disagree**

1 2 3 4 5 6 7

- All negotiations for Stage II requirements occur through the CGSC.

[30] **strongly agree** \[\_\_\_\_\_\_\_\_] **strongly disagree**

1 2 3 4 5 6 7

- Reasons for Stage I rejection are clearly articulated.

[31] **strongly agree** \[\_\_\_\_\_\_\_\_] **strongly disagree**

1 2 3 4 5 6 7

- The time required for this review is reasonable.

[32] **strongly agree** \[\_\_\_\_\_\_\_\_] **strongly disagree**

1 2 3 4 5 6 7

- The coordination of this review is satisfactory.

[33] **strongly agree** \[\_\_\_\_\_\_\_\_] **strongly disagree**

1 2 3 4 5 6 7
3. **Review of Stage II** (review comments, CGSC negotiations).

- The mechanism for review of this stage is clearly understood.

[34] strongly agree ____________________________ strongly disagree
1 2 3 4 5 6 7

- All negotiations for permitting and licensing occur through the CGSC.

[35] strongly agree ____________________________ strongly disagree
1 2 3 4 5 6 7

- The financial information is well integrated with the other assessment information.

[36] strongly agree ____________________________ strongly disagree
1 2 3 4 5 6 7

- The decision for approval-in-principal is clearly understood.

[37] strongly agree ____________________________ strongly disagree
1 2 3 4 5 6 7

- Reasons for Stage II rejection are clearly understood.

[38] strongly agree ____________________________ strongly disagree
1 2 3 4 5 6 7
The time required for this review is reasonable.

[39] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

The co-ordination of this review is satisfactory.

[40] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7
GUIDANCE FOR MANAGEMENT

This objective is implicit in the activities requested of the coal developer by the CDG process.

1. **Permits and licences:**

- Planning for these should be begun early in the project development process.

[41] strongly agree __________________________ strongly disagree
1  2  3  4  5  6  7

- Evidence of planning should be seen in formal reports.

[42] strongly agree __________________________ strongly disagree
1  2  3  4  5  6  7

- Withholding permits is an appropriate technique to deal with the concerns of non-permitting agencies.

[43] strongly agree __________________________ strongly disagree
1  2  3  4  5  6  7

- Permitting and licencing are appropriate tools for management.

[44] strongly agree __________________________ strongly disagree
1  2  3  4  5  6  7
2. **Monitoring:**

- Continuous measurements of air and water quality, stream sediment load, vegetation regrowth, housing prices, crime rates etc. is an effective way of inspecting the ongoing effects of coal mining operations.

[45] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

- Monitoring should be designed early in the project planning process.

[46] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

- The results of monitoring are likely to be taken into account in mine management. (i.e. altering production in light of monitoring results).

[47] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

- Monitoring is an appropriate tool for managing possible impacts.

[48] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7
3. Enforcement:

- Mine operations are likely to meet provincial specifications (air and water quality).

[49] strongly agree ______________________ strongly disagree  
1 2 3 4 5 6 7

- An enforcement system is needed to ensure that approval conditions, specifications, and understandings are met.

[50] strongly agree ______________________ strongly disagree  
1 2 3 4 5 6 7

- Enforcement is an appropriate mechanism for managing impacts.

[51] strongly agree ______________________ strongly disagree  
1 2 3 4 5 6 7

4. Research:

- Site-specific research should be coordinated with other agencies (corporations) working in the same region.

[52] strongly agree ______________________ strongly disagree  
1 2 3 4 5 6 7

- Off-site regional research (wildlife, fisheries, social/economic) should be conducted.

[53] strongly agree ______________________ strongly disagree  
1 2 3 4 5 6 7
Continuing research is appropriate to manage impacts.

[54] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

5. Information Access:

- All information provided by the proponent should be
  publicly available.

[55] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

- Freedom of information acts or comparable legislation
  would aid the CDG process.

[56] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

- Access to information is important in managing impacts.

[57] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7

6. Regional Planning:

- Strategic regional plans should be incorporated into
  the CDG process.

[58] strongly agree __________________________ strongly disagree
1 2 3 4 5 6 7
- Project-specific analysis like the CDG leads to aggregate regional problems.

<table>
<thead>
<tr>
<th>[59] strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

- Regional rather than project specific appraisals would produce better management.

<table>
<thead>
<tr>
<th>[60] strongly agree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
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</table>
APPENDIX E

RESPONDENTS TO INTERVIEW AND/OR QUESTIONNAIRE
### RESPONDENTS TO INTERVIEW AND/OR QUESTIONNAIRE

<table>
<thead>
<tr>
<th>Name</th>
<th>Agency</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Atchison</td>
<td>Inspection and Engineering Branch, Ministry of Provincial Secretary</td>
<td>10 May 1982</td>
</tr>
<tr>
<td></td>
<td>and Government Services</td>
<td></td>
</tr>
<tr>
<td>L. Canty*</td>
<td>Assistant Deputy Minister, Ministry of Education</td>
<td>7 June 1982</td>
</tr>
<tr>
<td>L. Cherene</td>
<td>B.C. Coal, Vancouver</td>
<td>10 June 1982</td>
</tr>
<tr>
<td></td>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td>T. Cockburn</td>
<td>Lands Division</td>
<td>12 May 1982</td>
</tr>
<tr>
<td></td>
<td>Ministry of Lands, Parks and Housing</td>
<td></td>
</tr>
<tr>
<td>R. Crouse</td>
<td>V. P. Mining, Crows Nest Resources Ltd., Calgary</td>
<td>29 June 1982</td>
</tr>
<tr>
<td>J. Errington</td>
<td>Inspection and Engineering Branch, Ministry of Energy, Mines and</td>
<td>10 May 1982</td>
</tr>
<tr>
<td></td>
<td>Petroleum Resources</td>
<td></td>
</tr>
<tr>
<td>Y. Fellman*</td>
<td>Water Management Branch, Ministry of Environment</td>
<td>11 May 1982</td>
</tr>
<tr>
<td>C. Hawksworth</td>
<td>Strategic Planning Branch, Ministry of Municipal Affairs</td>
<td>12 May 1982</td>
</tr>
<tr>
<td>R. Hawes</td>
<td>Consultant, Norecol, Vancouver</td>
<td>21 June 1982</td>
</tr>
<tr>
<td>H. Howie</td>
<td>Waste Management Branch, Ministry of Environment</td>
<td>10 May 1982</td>
</tr>
<tr>
<td>B. Hubbard</td>
<td>Ministry of Lands, Parks and Housing</td>
<td>12 May 1982</td>
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</table>

*Interview only

†Questionnaire only
<table>
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<tr>
<th>Name</th>
<th>Agency</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>W. Malkinson</td>
<td>Economic Analysis and Research Bureau, Ministry of Industry and Small Business Development</td>
<td>14 May 1982</td>
</tr>
<tr>
<td>M. Matheson</td>
<td>Capital Assistance Program, Recreation Facilities, Ministry of Provincial Secretary and Government Services</td>
<td>13 May 1982</td>
</tr>
<tr>
<td>J. McDonald</td>
<td>Inspection and Engineering Branch, Ministry of Energy, Mines and Petroleum Resources</td>
<td>10 May 1982</td>
</tr>
<tr>
<td>T. Milligan</td>
<td>Environmental Services, B.C. Coal, Sparwood</td>
<td>25 May 1982</td>
</tr>
<tr>
<td>J. O'Riordan</td>
<td>Planning and Assessment Branch, Ministry of Environment</td>
<td>11 May 1982</td>
</tr>
<tr>
<td>D. Poister</td>
<td>Consultant, Norecol, Vancouver</td>
<td>1 June 1982</td>
</tr>
<tr>
<td>N. Ringstad</td>
<td>Assessment and Planning Division (formerly with Fish and Wildlife Branch), Ministry of Environment</td>
<td>21 May 1982</td>
</tr>
<tr>
<td>P. Schera</td>
<td>Aquatic Studies Branch, Ministry of Environment</td>
<td>11 May 1982</td>
</tr>
<tr>
<td>J. Schuyff‡</td>
<td>Program Services Branch, Ministry of Labour</td>
<td>25 May 1982</td>
</tr>
<tr>
<td>W. Swanson*</td>
<td>Strategic Studies Branch, Ministry of Forests</td>
<td>12 May 1982</td>
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<tr>
<td>D. Taylor*</td>
<td>Strategic Planning Branch, Ministry of Human Resources</td>
<td>14 May 1982</td>
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</table>
APPENDIX F

PRINCIPAL COAL POLICY COMPONENTS
### Principal Coal Policy Components

<table>
<thead>
<tr>
<th>Policy</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project review</strong></td>
<td>Investment by the private sector in viable, new coal and coal-related activities will be encouraged by the government, subject to controls which reflect the economic, energy, environmental, and social criteria established by the province of B.C.</td>
</tr>
<tr>
<td><strong>Conservation &amp; energy self-sufficiency</strong></td>
<td>The province reserves the right to meet its requirements for all uses of coal resources, and to designate those quantities and types of B.C. coal available to domestic Canadian markets and for export to international markets. Because the resource is finite, conservation is important in view of unforeseen energy needs.</td>
</tr>
<tr>
<td><strong>Procurement</strong></td>
<td>To maximize provincial benefits, the use of B.C. expertise and resources in coal development will be stressed and encouraged. Firms intending to become involved directly in coal operations or in providing services to such operations will be encouraged to establish a tangible business presence in the province.</td>
</tr>
<tr>
<td><strong>Resource communities</strong></td>
<td>Development of multi-resource communities, which may outlive activities associated with coal mining alone, will be encouraged and included in the planning of coal developments.</td>
</tr>
<tr>
<td><strong>Research and development</strong></td>
<td>The government will establish means for the determination of research, development, and education priorities related to coal, the development and coordination of programs, the dissemination of research and development information, and the administration of funds provided for these purposes.</td>
</tr>
<tr>
<td><strong>Manpower planning</strong></td>
<td>The government will coordinate manpower planning activities and will encourage the participation of representatives of educational, trade, and professional organizations, the coal industry, and appropriate government ministries.</td>
</tr>
<tr>
<td>Policy</td>
<td>Objective</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Marketing</td>
<td>The government will establish a market research capability to coordinate coal development and marketing plans and objectives of both the public and private sectors.</td>
</tr>
<tr>
<td>Secondary processing</td>
<td>Maximization of net benefits to B.C. from development of the coal resource requires that full evaluation of potential end-use dedication and opportunities for further processing within the province be undertaken on a continuing basis. The government will therefore support and encourage programs related to initiation of alternative end uses and further processing of coal in the province, through appropriate government agencies and ministries, and coal-related government- and industry-supported organizations.</td>
</tr>
<tr>
<td>Allocation of rights</td>
<td>The province intends to replace its work credit licence system for granting coal exploration rights with a bidding mechanism involving competitive tenders to the Crown.</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>The province will encourage coal development in the northeast by providing assistance to infrastructure where this is beneficial to the economy and is needed for a project to proceed. The criteria for infrastructure assistance are that the project generate net economic benefits and that without financial assistance the developer would be unable to realize a fair rate of return.</td>
</tr>
<tr>
<td>Royalty and taxation</td>
<td>The province will move toward a common tax system for both base metals and coal. The government will retain the existing $1.48 per tonne royalty on coking coal.</td>
</tr>
<tr>
<td>Environmental</td>
<td>The province is committed to responsible management of environmental impacts of coal development activities and to the planning for optimal land use.</td>
</tr>
</tbody>
</table>
## PROVINCIAL RESOURCE MANAGEMENT GOALS

<table>
<thead>
<tr>
<th>Area</th>
<th>Agency</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>MAF, MOF, ALC</td>
<td>To preserve land and water resources necessary for both the short term and the long term; to preserve agricultural land for family farm use; to attain equitable distribution of the full potential contribution of rangeland and all its component resources to the social and economic welfare of B.C.*</td>
</tr>
<tr>
<td>Air</td>
<td>MOE</td>
<td>To manage the air as a resource, so that a clean and healthy atmospheric environment is maintained for British Columbians, both now and in the future.*</td>
</tr>
<tr>
<td>Corridors</td>
<td>MTH, BCR, BC HYDRO</td>
<td>To supply and manage public highways, railways, pipelines and hydro-transmission lines, as required to enhance the economic viability of the province; to identify and preserve future options.**</td>
</tr>
<tr>
<td>Economic &amp; Industrial development</td>
<td>MISBD, BCDC</td>
<td>To increase the opportunities for productive employment; to maintain and enhance the real incomes of the people; to provide stability of employment and real incomes in the province; and to achieve a more equitable economic balance among the various regions of B.C.</td>
</tr>
<tr>
<td>Education</td>
<td>MEd</td>
<td>To ensure that educational services are provided as equitably as possible throughout the province; to establish coal-related training programs.**</td>
</tr>
</tbody>
</table>

*Goals that are likely to conflict with coal resource development policy.

**Goals that are likely to complement the policy of coal resource development.

Goals shown without an asterisk contain elements that both support and conflict with coal resource development policy.
<table>
<thead>
<tr>
<th>Area</th>
<th>Agency</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; public utilities</td>
<td>MEMPR, BC UC, BC HYDRO</td>
<td>To regulate public utilities and review and permit major energy development projects.</td>
</tr>
<tr>
<td>Environment</td>
<td>MOE</td>
<td>To provide for more effective environmental protection and planning, with mitigation to ensure that projects are designed to minimize total costs (including the resource and social costs which may be associated with development), and compensation to ensure that the resource and social costs which remain are borne, and are fully taken into account, by the developer, and ultimately by the consumers of the goods or services which the development provides.</td>
</tr>
<tr>
<td>Fisheries</td>
<td>MOE</td>
<td>To produce maximum economic, cultural, recreational, and scientific benefits for present and future residents by maintaining all native and desirable introduced species of fish at optimum levels of distribution, abundance, and health, and by protecting or enhancing essential freshwater habitat, and by providing an equitable distribution of opportunities within B.C. for a wide variety of uses of fish.*</td>
</tr>
<tr>
<td>Health</td>
<td>MOH</td>
<td>To ensure that satisfactory preventative and treatment services relating to physical and mental health are developed and provided as equitably as possible throughout the province, and at an acceptable cost.</td>
</tr>
<tr>
<td>Heritage</td>
<td>MPS &amp; GS</td>
<td>To preserve representative samples of B.C.'s cultural heritage for the scientific, educational, and recreational benefit of present and future generations; to ensure that the populace is sufficiently compensated for significant losses of heritage resources.*</td>
</tr>
<tr>
<td>Land</td>
<td>MLPH, MOF, MEMPR</td>
<td>To establish and implement an integrated planning process for Crown lands, and to regulate the disposition of Crown lands.**</td>
</tr>
<tr>
<td>Metal minerals</td>
<td>MEMPR</td>
<td>No stated goal--policy assumed which favours development of metal mineral deposits.**</td>
</tr>
<tr>
<td>Area</td>
<td>Agency</td>
<td>Goal</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Petroleum &amp; natural gas</td>
<td>MEMPR, BCPC, NEB</td>
<td>To regulate, distribute, and price natural gas and petroleum in the interests of the province and Canada.</td>
</tr>
<tr>
<td>Recreation</td>
<td>MLPH, MOF</td>
<td>To plan and manage public recreational areas, for the inspiration, used, and enjoyment of the people of B.C.*</td>
</tr>
<tr>
<td>Sand and gravel</td>
<td>MLPH, MOE, MF, MOF, MEMPR, RD, MTH, MMA, WCB, ALC, DIAND, DFO, Municipalities</td>
<td>No resource management policy or goals in place at this time.**</td>
</tr>
<tr>
<td>Settlements</td>
<td>MMA</td>
<td>To ensure that there is in place a system of municipal and regional governments which provides a high standard of local government services to the people including the pattern of primary urban/settlement land uses in communities and regions of the province, and to ensure that the overall provincial pattern of human settlements and land use develops in a manner which enables the economic provision of public services and facilities, consistent with environmental values and resource production objectives.</td>
</tr>
<tr>
<td>Timber</td>
<td>MOF</td>
<td>To manage forests for timber production through intensive forest management and planning.*</td>
</tr>
<tr>
<td>Waste</td>
<td>MOE</td>
<td>To manage waste materials from society and industry for the protection of the environment.*</td>
</tr>
<tr>
<td>Water</td>
<td>MOE</td>
<td>To allocate, manage, and protect the water resources in order to obtain the highest and best use.*</td>
</tr>
<tr>
<td>Wildlife</td>
<td>MOE</td>
<td>To maintain the diversity of species which are representative of the major biophysical zones so as to ensure that, within the constraints of land capability and the biophysical limits of each species, wildlife is available sufficient to meet the social, recreational, and economic needs of society.*</td>
</tr>
</tbody>
</table>
APPENDIX H

PROVINCIAL INSTITUTIONAL AGENCIES INVOLVED IN ASSESSING COAL MINE DEVELOPMENTS
# Provincial Institutional Agencies Involved in Assessing Coal Mine Developments

<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEMPR Titles Branch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coal Act, B.C. Reg. 555/79, OIC 3051</strong></td>
<td>Free miner's certificate, licence, coal lease, limited production permit.</td>
<td>Regulates use of lands which are available for coal production by defining the general conditions under which title to coal lands may be obtained and held.</td>
</tr>
</tbody>
</table>

| **MEMPR Inspection & Engineering Branch** |                                               |          |
| **Coal Mines Act (formerly Coal Mine Regulations Act)** | Exploration and reclamation permits, bonding, mine plan approval, authorization to commence work permit, production reclamation permit, certificate of competency, blasting certificate. | Regulates mine safety and environmental protection. Requires that a notice of work on a coal licence be submitted prior to field work and a Reclamation Report be filed annually (Coal Exploration Form 7-8). |

| **MEMPR Geological Branch** |                                               |          |
| **Coal Act, regulations** | Requires submission of coal deposit drill cores. | Collects, compiles, and interprets and distributes coal exploration and development data through a number of computer files. |

<p>| <strong>MEMPR Policy &amp; Evaluation Branch</strong> |                                               |          |
| <strong>Guidelines for Coal Development (CDG)</strong> | Approval-in-principle after Stage II. | A project appraisal process to assist coal companies in preparing assessments for their development proposals and coordinating a systematic series of government reviews. Operates COALMOD, a computerized financial and economic evaluation system. |</p>
<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilities Commission Act</strong></td>
<td>Regulates secondary coal processing, e.g., slurry pipelines, gasification, liquefaction, and coal for electrical generation over 20 megawatts.</td>
<td>Primary processing and shipments of coal are not considered &quot;regulated&quot; projects.</td>
</tr>
<tr>
<td><strong>Environment and Land Use Act</strong></td>
<td>Approval-in-principle for new coal developments.</td>
<td>Chairs the inter-agency cabinet committee, ELUC.</td>
</tr>
<tr>
<td><strong>Environment Management Act, Compensation/Mitigation Guidelines</strong></td>
<td>Environmental protection orders, emergency protection orders.</td>
<td>Provides for development of government standards and management objectives which give prior notice of specific environmental concerns throughout B.C.</td>
</tr>
<tr>
<td><strong>Waste Management Act (proposed), Pollution Control Act, Pollution Control Regulations (B.C. Reg. 97/67)</strong></td>
<td>Waste discharge permits. Pollution control permits or approvals.</td>
<td>Emissions, effluents, and refuse disposal must conform to the objectives as stated in Pollution Objectives for Mining, Smelting and Related Industries of B.C.</td>
</tr>
<tr>
<td><strong>Water Act</strong></td>
<td>Water licence, permits, or approvals.</td>
<td>Comptroller of Water Rights determines whether or not to hold a hearing into objections within the licence application procedure.</td>
</tr>
<tr>
<td>Legislation, Regulation or Guideline</td>
<td>Lease, Licence, Certificate, Permit, or Approval</td>
<td>Function</td>
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<td>-------------------------------------</td>
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</tr>
<tr>
<td><strong>Fish &amp; Wildlife Branch</strong></td>
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<td></td>
</tr>
<tr>
<td><em>Wildlife Act</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Wildlife Management Act (proposed)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigative actions/compensation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Proposed Wildlife/Fisheries Management Plan for B.C.</em></td>
<td>Counters alienation of critical habitats or corridors to maintain targets in Wildlife Area Plans.</td>
<td></td>
</tr>
<tr>
<td><strong>Assessment &amp; Planning Division (Terrestrial, Aquatic, &amp; Air Studies Branch)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear Development Guidelines</td>
<td>Approval after Stage II.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coordinates the assessment of linear developments; recommends terms and conditions to ELUC.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term monitoring of baseline data; provides inventory support to the Management Division and aid to coal companies.</td>
<td></td>
</tr>
<tr>
<td><strong>Agricultural Land Commission</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Agricultural Land Commission Act; Soil Conservation Act</em></td>
<td>Conditional use permits; right-of-way approvals.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regulates non-farming uses of land in agricultural land reserves (ALR).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regulates sediment control and use of top soil.</td>
<td></td>
</tr>
<tr>
<td><strong>MISBD, Economic Analysis &amp; Research Bureau</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Company Act; Procurement Policy Guidelines; Guidelines for Cost-Benefit Analysis, MISBD Act</em></td>
<td>Administers industrial uses of Crown Land under the Land Act; encourages competitive sourcing from B.C. and other Canadian suppliers in all major projects; formulates and advises on policies aimed at developing renewable resources, port facilities, and the transportation sector.</td>
<td></td>
</tr>
<tr>
<td>Legislation, Regulation or Guideline</td>
<td>Lease, Licence, Certificate, Permit, or Approval</td>
<td>Function</td>
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<td>-------------------------------------</td>
<td>-----------------------------------------------</td>
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</tr>
<tr>
<td>MLPH, Land and Housing, Regional Operations Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land Act</strong></td>
<td>Purchase, lease.</td>
<td>Authorization of tenure for plant sites, linear development, rights-of-way, gravel pits or any coal mine component off a coal licence.</td>
</tr>
<tr>
<td><strong>MOF, Forest Service</strong></td>
<td>Protocol agreements with BCDC, MOF.</td>
<td></td>
</tr>
<tr>
<td><strong>Forest Act; development guidelines; environmental protection guidelines</strong></td>
<td>Timber sale harvesting licence; free use permits; log slash permits.</td>
<td>Coal developer to contact Forest Service to complete Coal Exploration Form for forest land tenures and road access development. Environmentally sensitive zoning.</td>
</tr>
<tr>
<td><strong>MOF, Range Branch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Range Act</strong></td>
<td>Grazing permits.</td>
<td></td>
</tr>
<tr>
<td><strong>MPS and GS, Heritage Conservation Branch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heritage Conservation Act; Guidelines for Heritage Resources Impact Assessment</strong></td>
<td>Permits, site survey, site investigation applications.</td>
<td>Management of B.C.'s Heritage Resources through coordination of the HRARP.</td>
</tr>
<tr>
<td><strong>Capital Assistance Program</strong></td>
<td>Cooperation with companies.</td>
<td>Capital funding for recreational facilities.</td>
</tr>
<tr>
<td>Legislation, Regulation or Guideline</td>
<td>Lease, Licence, Certificate, Permit, or Approval</td>
<td>Function</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------------------------------------------</td>
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</tr>
<tr>
<td><strong>Ministry of Transport &amp; Highways</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Highway Act</strong></td>
<td>Permits.</td>
<td>Regulates access to designated, controlled highways.</td>
</tr>
<tr>
<td><strong>Highway (Industrial) Act</strong></td>
<td>Permits.</td>
<td>Defines industrial roads other than forestry and regulates their operation.</td>
</tr>
<tr>
<td><strong>Pipeline Act</strong></td>
<td>Permits.</td>
<td>Regulates all aspects of the construction and operation of pipelines under provincial jurisdiction and for construction of facilities across or within rights-of-way.</td>
</tr>
<tr>
<td><strong>Municipal Act</strong></td>
<td>Establishment of municipalities and regional districts.</td>
<td>Focusses the planning for resource (coal) and community development. Responsible for assessment and taxation, incorporation, community planning, and special areas.</td>
</tr>
<tr>
<td><strong>Land Use Act</strong> (proposed)</td>
<td>Official community/regional plans, by-laws, amendments, and regulations.</td>
<td>The official Settlement Planning Process describes a system of planning at all levels of government which aims to coordinate provincial planning and land-use programs in an integrated framework. This defines procedures and time limits for decisions on development proposals and establishes and appeals process.</td>
</tr>
<tr>
<td><strong>Ministry of Labour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mines Act</strong></td>
<td></td>
<td>Ensures worker safety provisions,</td>
</tr>
<tr>
<td>Legislation, Regulation or Guideline</td>
<td>Lease, Licence, Certificate, Permit, or Approval</td>
<td>Function</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Ministry of Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Act</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regulates sewage disposal systems which process less than 5,000 Imp. gals. sewage/day through local Board of Health. Responsibility for overall health planning and local community health issues dealt with specifically through the Regional Hospital District Board.</td>
<td></td>
</tr>
<tr>
<td><strong>Ministry of Education (authority mandated to local Board)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Act; College and Institutions Act</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Company may interact with local Boards on school programs or facility issues.</td>
<td></td>
</tr>
<tr>
<td><strong>Ministry of Human Resources</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requires municipalities to contribute to the costs of specific social assistance programs.</td>
<td></td>
</tr>
<tr>
<td><strong>Ministry of Attorney General</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brings concerns of provision of court services and enforcement planning to the SECC, as well as any native Indian concerns.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

FEDERAL INSTITUTIONAL AGENCIES INVOLVED
IN B.C. COAL MINE DEVELOPMENTS
FEDERAL INSTITUTIONAL AGENCIES INVOLVED IN B.C. COAL MINE DEVELOPMENTS

<table>
<thead>
<tr>
<th>Legislation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy, Mines &amp; Resources</td>
<td>Geological Survey of Canada, map and report publications,</td>
</tr>
<tr>
<td>National Energy Board</td>
<td>Regulates interaction between a project and a pipeline under federal jurisdiction.</td>
</tr>
<tr>
<td>Transport Canada; Canada Coast Guard</td>
<td>Regulates developments which could impede surface use of navigable waterways; e.g., bridges, port structures.</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>Empowers the federal government to conduct monitoring and research and to set objectives for emissions (subject to provincial approval). Coordinates internal RSCC.</td>
</tr>
<tr>
<td>Inland Waters Directorate; Indian Affairs and Northern Development</td>
<td>Agency within DOE, gives federal government power to: arrange intergovernmental committees on water policies; establish inventories; and design and implement projects for water use (subject to provincial cooperation).</td>
</tr>
<tr>
<td>Department of Fisheries and Oceans</td>
<td>Prohibits placing of debris in fishing streams; provides for the protection of fish and fish habitat.</td>
</tr>
</tbody>
</table>

**Legislation**

**Function**
APPENDIX J

INTER-AGENCY COMMITTEES WITH COAL-DEVELOPMENT RESPONSIBILITIES
### INTER-AGENCY COMMITTEES WITH COAL-DEVELOPMENT RESPONSIBILITIES

<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
</table>

#### Environment & Land Use Committee

**Environment and Land Use Act**

- Gives approval-in-principle for coal mine development.

  The Act establishes legislative authority for ELUC, giving this committee responsibility for ensuring that all aspects of preservation and maintenance of the natural environment are fully considered in the administration of land use and resource development.

  A cabinet committee MOE,* Mag, MEMPR, MMA, MISBD, MOF, MTH, MLPH, MOH.

#### Environment & Land Use Technical Committee

Deputy ministers of the ELUC ministries. Committee receives recommendations from CGSC and makes representation to ELUC after Stage II.

#### Coal Guidelines Steering Committee

- Guidelines for coal development
- Recommends terms and conditions for approval-in-principle after Stage II.

  Coordinates government review of new coal projects with working-level representation from MEMPR,* MOE, MLPH, MISBD, MTH, MOL, HCB.

*Committee chair
<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-Economic Coordinating Committee (Sub-committee of CGSC)</td>
<td>Involved in jointly developing Stage II study requirements.</td>
<td>Funnels socio-economic input into the review process (MMA,* MISBD, MOH, MOL, MAG, as coordinator for Native Indian programs).</td>
</tr>
<tr>
<td>Benefit/Cost Guidelines</td>
<td>MEMPR,* MISBD—uses COALMOD (a simulated coal production model). A full C/B is done if significant investment of public monies is required for infrastructure. Confidential cost and revenue data are required. Involved in financial simulation and cost/benefit analysis of proposed coal developments.</td>
<td></td>
</tr>
<tr>
<td>Coal Mine Regulation Act (Section 9)</td>
<td>Approval of programs for protection and reclamation, issues reclamation permits.</td>
<td>MEMPR,* MAG, MOF, MOE (Aquatic Studies, F &amp; W), MLPH.</td>
</tr>
<tr>
<td>Mines Act (Section 8)</td>
<td>Approvals issued regionally—reviews notice of work on a coal licence, reclamation program, annual reclamation reports.</td>
<td>Provides technical advice on permits to proponent and indicates regional project concerns (MEMPR,* MOE, Mag, MOF, MLPH). Meets infrequently; role re CGSC uncertain.</td>
</tr>
</tbody>
</table>

*Committee chair
<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cabinet Committee Coal Development (1981)</strong></td>
<td></td>
<td>Non-legislated cabinet committee functioning to coordinate Northeast Coal Development program. MISBD,* MEMPR, MOE, MTH, MMA, MLPH, MOF, MOL, M. of Tourism, M.F.</td>
</tr>
<tr>
<td><strong>Cabinet Committee Coal Development</strong></td>
<td><strong>Deputy Minister's Committee</strong></td>
<td><strong>Functions for NECD project management and control.</strong> Reviews status reports from NEC development office. Assists NECDO in coordination, facilitation, and implementation of decisions taken by CCCD,</td>
</tr>
<tr>
<td><strong>North East Coordinating Coal Committee &amp; North East Coal Development Office</strong></td>
<td></td>
<td>Prepares status reports (B.C. Hydro, BCR, CNR, MTH, NNB, Quintette Coal Ltd., Teck Corporation). Conducts investigations on all final agreements with province and mining companies. Provides liaison between developer and responsible ministries by reporting to CCCD/DM committee. Coordinates information dissemination,</td>
</tr>
<tr>
<td><strong>North East Coal Regional Impact Consultation Committee</strong></td>
<td></td>
<td>Gathers and communicates socio-economic input. Manages impacts. (MED, MHK, MISBD, MOL, MOK, MMA,* Mag)</td>
</tr>
</tbody>
</table>

*Committee chair
<table>
<thead>
<tr>
<th>Legislation, Regulation or Guideline</th>
<th>Lease, Licence, Certificate, Permit, or Approval</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Regional Screening &amp; Coordinating Committee</td>
<td></td>
<td>Reviews Stages I and II documents for federal concerns. Reports to federal cabinet, and inputs to CGSC. (DOE,* DFO)</td>
</tr>
</tbody>
</table>

*Committee chair