FINAL PROJECT

REPORT SPECIFICATIONS

FOR MANALTA COAL LTD's PROPOSED

TELKWA COAL PROJECT

prepared by the

TELKWA COAL PROJECT COMMITTEE

under the

Environmental Assessment Act,

R.S.B.C. 1996 c.119

Report Dated: August 1997

TABLE OF CONTENTS

- Providing for Public Participation

5.2 Current Status of Project Review

- Telkwa Coal Project Committee
- Purpose of Project Report
- Scope Of Project Report Specifications
- Preparing Draft Project Report Specifications
- Finalizing the Project Report Specifications

5.3 Next Steps

- Preparing the Project Report
- Screening of the Project Report
- Project Report Review and Decision Making
- Public Hearing
- Basis for Project Certificate Decision
- Granting of Project Approval Certificate
- Post-Certification Phase

5.4 Relationship of EA Process to Land Use

Planning Processes

- Land Zoning
- Bulkley Forest District Land and Resource Management Plan (LRMP)

FINAL PROJECT REPORT SPECIFICATIONS

A. GENERAL REPORTING REQUIREMENTS FOR THE PROJECT REPORT

A.1 Organization and Structure of the Project Report

A.2 Scope of the Project

B. SPECIFIC TECHNICAL, MINE DESIGN, RECLAMATION AND MANAGEMENT SPECIFICATIONS

B.1 Mine Design/Plan

- Mine Plan
- Coal Pits
- Sterilized Areas
- Geotechnical Work
- Tailings Impoundment
- Mine Sequencing
- Geologicial Information

B.2 Reclamation Program

· Reclamation Plan

B.3 Consideration of Alternatives

C. ENVIRONMENTAL, RESOURCE MANAGEMENT AND TECHNICAL SPECIFICATIONS

C.1 Environmental Baseline Impact Assessment and

Mitigation

- Climate
- Topography and Surface Drainage
- Soils Mapping
- Terrestrial Ecosystem Mapping
- Land Ownership and Use
- End Land Use

C.2 Air Quality and Greenhouse Gas Emissions

- Air Quality
- Greenhouse Gas Emissions

C.3 Acid Rock Drainage and Metal Leaching

- General Project Report Requirements
- ARD and Metal Leaching Assessment
- Overburden
- Waste Rock
- Tailings Impoundment
- Coal Resources
- Dump Construction and Blending
- Construction Material
- Hydrological Considerations
- Collection and Treatment
- General Assessment Requirements
- Geotechnical and Hydrology Issues
- Blended Waste Dumps

C.4 Surface Hydrology and Water Management

C.5 Ground Water

C.6 Water Quality

- Water Quality
- General Waste Management and Spill Control

C.7 Fish and Fish Habitat

C.8 Wildlife, Wildlife Habitat and Vegetation

Communities

C.9 Forest Resources

- Range
- Forest and Recreation Access
- Timber

C.10 Agricultural Resources

C.11 Environmental Supervision Monitoring

D. SOCIO-ECONOMIC AND COMMUNITY ISSUES

D.1 Socio-Economic Profile of Affected Communities and Region

D.2 Employment and Income Effects

- General Context
- General Employment Information

D.3 Enhancing Local Socio-Economic Benefits

D.4 Economic Development Benefits

D.5 Recreation and Tourism Impacts

D.5(A)On site and Adjacent Outdoor Recreational Use

D.5(B)Air Quality Impact of Development

D.5(C)Visual Impacts of Development

D.5(D)Noise Impacts of Development

D.5(E)Commercial Tourism

D.5(F)Fish and Wildlife Recreation

D.6 Impacts to Neighbouring Rural Residential Lands

D.7 Road Access Issues

D.8 Specific Infrastructure and Service Requirements

D.8(A)Health Services and First Aid Facilities

D.8(B)Solid Waste Disposal

D.8(C)Education and Schooling Services

D.8(D)Social Services

D.8(E)Day-care Services

D.8(F)Police Services

D.8(G)Fire-fighting Services

D.8(H)Emergency Preparedness

D.9 Infrastructure, Government Services and Revenue Impacts

·Infrastructure and Services

·Taxes

D.10 Accommodation Requirements

D.11 Demographic and Social Effects

D.12 Lifestyle Impacts

D.13 Monitoring Plan for Socio-economic Effects

D.14 Archaeological Issues

- Previous Archaeological Studies
- Information Deficiencies
- Additional Background Information

E. FIRST NATIONS ISSUES

F. CUMULATIVE EFFECTS

Appendix A - PUBLIC ISSUES AND CONCERNS RAISED DURING THE REVIEW OF THE PROJECT APPLICATION AND DRAFT SPECIFICATIONS

PREFACE

1. PURPOSE OF THIS DOCUMENT

Manalta Coal Ltd. (Manalta), of Alberta, has applied under the *Environmental Assessment (EA) Act* for a project approval certificate for its proposed Telkwa coal project (see project description below). The project committee which is steering the assessment of this project has determined that Manalta must file a project report (detailed impact assessment submission) in support of its application.

These final specifications have been prepared by the project committee on the basis of input received from the public, First Nations and federal, provincial and local government agencies during the review of Manalta's application documentation (which consists of a 3 volume application and supporting documentation, filed with the Environmental Assessment (EA) Office in February 1997).

This Preface describes the background to the current review of the Telkwa project proposal. In accordance with section 21 of the *EA Act*, the main body of this document sets out draft project report specifications. These draft specifications are accompanied by Appendix, A which itemizes the issues raised by the public during the review of Manalta's application documentation, and indicates where, in the specifications, those issues are addressed.

A public review period, which commenced on July 10, and ended August 10, 1997 provided the public, key stakeholders and Manalta with time to review and comment on the draft specifications. The project committee finalized the specifications within 20 days after the public review period, taking into account the comments received on this draft version during the public review.

2. PROPOSED TELKWA COAL PROJECT

Manalta proposes to develop the Telkwa Coal project (The project) located near Telkwa, in the Bulkley Valley, in northern British Columbia (see Figure 2-1). The project, if approved, will mine 1 million to one and a half million tonnes of coal annually for a mine life of approximately 25 years. The construction workforce will peak at 170 to 200 persons over a 12 to 15month period, with an operating work force of 120 to 140 employees over the 25 years.

Figure 2-1: Project Location Map

Coal associated with the project is a high quality, low ash, bituminous coal suitable for use in the steel making industry, or as a fuel for thermal power generation. Coal will be mined from three major mining areas that will be mined sequentially within the project area (see Figure 2-2).

The proposed coal preparation plant, mine maintenance facilities and mine service facilities will be located near the original Bulkley Valley Collieries minesite approximately six km southwest of the Village of Telkwa. Clean coal will be hauled by truck from the coal preparation plant, on an industrial access road to a rail loadout on the CN mainline, near the confluence of Hubert Creek and the Bulkley River. Coal will then be loaded onto unit trains and transported approximately 400 km by rail to the port of Prince Rupert. The location of all major project components is shown in Figure 2-2.

Coal will be mined exclusively from open pits using conventional truck and shovel methods. Currently proposed project plans indicate that mining will start in the Tenas Pit (south of Telkwa River), followed by Pit 3 with satellite pits also south of Telkwa River. The third and final mining area will include Pits 7 and 8, located north of the Telkwa River. Table 2-1 summarizes the coal reserves, approximate pit life and development area for each of the mining area:

Table 2-1 MINE AREA INFORMATION

Mining Area	Raw Coal Reserves (MT)	Years Mined	Development Area (ha)
Tenas Pit	20	0 - 14	650
Pit 3	15	14 - 20	550
Pits 7 and 8	11	20 +	500
TOTAL	46	20 +	1,700

3. SUMMARY OF PREVIOUS PROJECT REVIEW HISTORY

An approval-in-principle under the former mine development review process was granted in 1986 to Crowsnest Resources Ltd. (Crowsnest) for the Pit 3 and satellite pits coal development proposal on the south side of the Telkwa River. Project development did not proceed due to coal prices and project economics. In June 1990, Crowsnest submitted an application under the former mine development review process for review of development plans for Pits 7 and 8 on the north side of the Telkwa River. The

regionally based Northwest mine development review committee, with representation from provincial and federal government agencies, coordinated the project review. By the end of 1992 most major technical issues had been identified and resolved or known to be resolvable at permitting, excepting the concerns for the potential for acid rock drainage (ARD).

Figure 2-2: Mining Area

The review of the project was transferred to the mine development assessment process in August 1991, with the proclamation of the *Mine Development Assessment Act*. In 1992, Manalta purchased the project, and on June 30, 1995, the project review was transferred to the environmental assessment process at a step known as "Project Report Review".

In October 1996, Manalta requested a formal withdrawal of the Telkwa Coal project proposal and Transition Order M-347 (the order used to bring the project into the environmental assessment process), from the environmental assessment process.

A review of the new Project Concept Plan (dated October 1996), suggested that the current proposal was fundamentally different from the project transitioned under Transition Order M-347, due to changes in mine sequencing, load out and access road locations, and the addition of Tenas Pit. Having given careful consideration to Manalta's request, and based on an objective examination of the Project Concept Plan, the EA Office withdrew the project from the review process on November 20, 1996.

On February 3, 1997, Manalta submitted a new application in support of a project approval certificate under Section 7 of the *EA Act.* Representatives of the EA Office, Ministry of Environment, Lands and Parks, Ministry of Employment and Investment and the Canadian Environmental Assessment Agency screened the application and accepted it for review subject to the requirement for minor upgrades.

4. APPLICABILITY OF ENVIRONMENTAL ASSESSMENT PROCESSES TO PROJECT

4.1 APPLICABILITY OF PROVINCIAL EA PROCESS TO PROJECT

The project is considered a reviewable project under the *EA Act* because it meets the definition of a reviewable project as stated in section 19(1) of the *Reviewable Projects Regulation* (this regulation was enacted on June 30, 1995, pursuant to section 3 of the *Environmental Assessment Act*). With respect to coal mines, the construction of a new facility is reviewable if:

(a) the facility is within SIC code 063 - coal mines, and,

(b) the facility has, or when the construction phase is completed will have, a production capacity of 100,000 tonnes or more per year of clean coal or raw coal or a combination of both clean coal and raw coal ..."

Since the project is within a category considered reviewable and exceeds the specific threshold set out in the Regulation (proposal is to mine one million to one and half million tonnes annually), it is a reviewable project under the EA Act.

4.2 APPLICABILITY OF FEDERAL EA PROCESS TO THE PROJECT

The federal and provincial governments have recently signed the Canada-British Columbia Agreement on Environmental Assessment Cooperation (The Agreement). The Agreement is intended to eliminate as much potential procedural duplication as possible. The federal government will cooperate with the province by working through the provincial EA process to complete both screenings and comprehensive study assessments, based on submissions provided by Proponents. Under the Agreement, the federal government retains its separate decision making authority with respect to the acceptability of projects. The Agreement provides for individual projects to be subjected to a single review process, designed to meet both federal and provincial EA requirements.

Federal agencies have been canvassed to determine the potential triggers that would require the application of the *Canadian Environmental Assessment Act* (*CEAA*) to the project. The Canadian Environmental Assessment Agency concluded that there may not be a *CEAA* trigger for the overall project. As a result of this conclusion, Environment Canada coordinates federal input to the

Project committee to ensure other federal concerns and responsibilities are addressed. Environment Canada is continuing to consult with the Department of Fisheries and Ocean, the Canadian Coast Guard, Indian and Northern Affairs Canada, Health Canada, and Natural Resources Canada.

The most likely trigger for application of *CEAA* would be with regard to the proposed Telkwa River crossing which is scheduled to take place approximately 18-20 years from the start of project development. A formal approval under Section 5(1) of the *Navigable Waters Protection Act* (NWPA) requires that construction is commenced within 6 months and is completed within 3 years of the approval. Since construction of the bridge is not scheduled to begin for another 18 years, an approval cannot be granted given the current time frame. However, the Telkwa River bridge crossing will require future NWPA approval and will trigger *CEAA* at that time.

5. ENVIRONMENTAL ASSESSMENT REVIEW

5.1 OVERVIEW OF THE PROVINCIAL EA PROCESS

General Approach

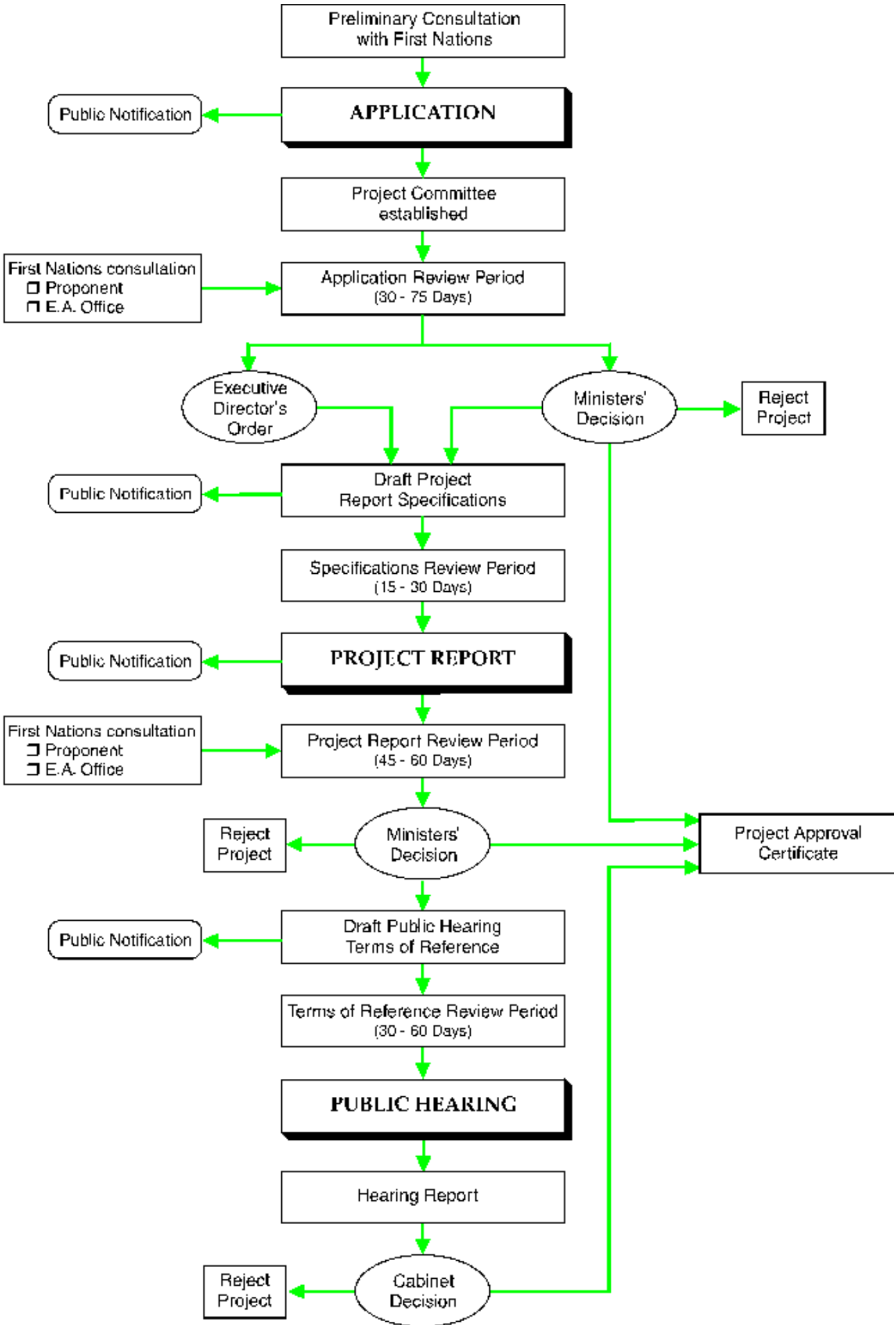
The *EA Act* (Bill 29) was proclaimed on June 30, 1995. The intent of the new legislation is to create a comprehensive, predictable, open, accountable, integrated and neutrally administered process for the assessment of the environmental, economic, social, cultural, heritage and health effects of major development proposals in British Columbia.

The EA process applies to major projects in the following sectors: industrial/manufacturing, mining, energy, water management (dams, dikes, reservoirs), waste disposal, food processing, transportation and tourism (destination resorts).

The legislation establishes a staged process through which the potential effects of projects are identified, and the potential means of preventing or mitigating any adverse effects are developed and considered. The staging of the EA process is depicted in Figure 5-1. The process is intended to support provincial goals for sustainability by ensuring that projects, if approved, are constructed in a manner, which minimizes adverse environmental and other effects to acceptable levels, while contributing economic and social benefits over the long term.

The legislation provides for the participation of the public, project proponents, First Nations, municipalities and regional districts, provincial and federal agencies, and neighboring jurisdictions in the assessment of projects. Reviews are administered by the EA office, and steered by project committees, which are comprised of representatives of federal, provincial and local government agencies and First Nations.

Figure 5-1: Steps in Environmental Assessment Process


Preliminary Consultation with First Nations
Public Notification
APPLICATION
Project Committee established
First Nations consultation
Proponent
E.A. Office
Application Review Period (30 - 75 Days)
Executive Director's Order
Ministers' Decision
Reject Project
Public Notification
Draft Project Report Specifications
Specifications Review Period (15 - 30 Days)
Public Notification
PROJECT REPORT
First Nations consultation
Proponent
E.A. Office
Project Report Review Period (45 - 60 Days)
Reject Project
Ministers' Decision
Project Approval Certificate
Public Notification
Draft Public Hearing Terms of Reference
Terms of Reference Review Period (30 - 60 Days)
PUBLIC HEARING
Hearing Report
Reject Project
Cabinet Decision

Role of Project Committees

Under the *EA Act*, project committees are established to steer the review of the project. Committee members ensure policy and technical expertise is made available to the review of each project, and are expected to:

- assess the adequacy of proponent's public and First Nations consultation activities;
- analyze input received from the public, government agencies, and First Nations in response to invitations to comment at various stages of project review;
- assess the potential effects of projects, and the potential to prevent or mitigate adverse effects of projects; and
- provide analysis, advice, and recommendations to the Executive Director of the EA Office, the Minister of Environment, Lands and Parks, and the Responsible Minister in respect of projects under review.

Working with the EA Office, project committees have overall responsibility for ensuring that project reviews:

- are comprehensive and technically sound;
- involve all of the potentially interested parties; and
- are conducted in a timely and efficient manner, and in accordance with the legislated time limits established for individual review steps under the *Time Limits Regulation*.

Providing for First Nations Participation

The main goals of First Nations participation in the EA process are:

- to provide notification and information to First Nations at an early stage in the planning of proposed reviewable projects which may be of interest or concern to them;
- to ensure that there is adequate First Nations input into the identification and resolution of concerns and issues raised with respect to proposed projects and their potential effects;
- to ensure that local First Nations information, knowledge and concerns contribute to both the project design process of the proponents and the decision making process of government;
- through traditional use studies, to establish the extent (if any) to which a project may infringe upon the exercise of aboriginal rights in the project area, and where such infringements are possible, to explore options for preventing, mitigating or compensating for potential adverse effects; and
- to ensure that, to the extent possible, those projects, which do proceed, do so without infringing on aboriginal rights.

Under the *EA Act*, potentially affected First Nations must be notified about project reviews conducted under the EA process, informed of their opportunities to provide input to the process, provided with information on projects which are subject to EA review, and consulted as the review progresses. The First Nations notification, access to information and consultation requirements for each project review are determined on a project-specific basis, and are tailored to the specific circumstances of each review. For most reviews, the responsibilities for notification, access to information and consultation are shared between the proponent and the EA Office. Typically, the EA Office and a project committee rely on the advice of First Nations members of the committee in designing notification, access to information and consultation measures targeted to First Nations people.

Providing for Public Participation

The main goals of public participation in the EA process are:

- to ensure an open and accountable review process;
- to provide notification and information to the public at an early stage in the planning of proposed reviewable projects;
- to ensure that there is adequate public input into the identification and resolution of concerns and issues raised with respect

to proposed projects and their potential effects; and
- to ensure that local public and community-level information, knowledge and concerns contribute to both the project design process of the proponent's and the decision making process of government.

Under the *EA Act*, the public must be notified about project reviews conducted under the EA process, informed of their opportunities to provide input to the process, provided with information on projects which are subject to EA review, and consulted as the review progresses. Formal public comment periods are provided for in the *EA Act* to ensure that the public has an adequate opportunity to review the primary documents generated during the EA review of a project, including the proponent's application, the project committee's draft project report specifications, and the proponent's project report.

The public notification, access to information and consultation requirements for each project review are determined on a project-specific basis, and are tailored to the specific circumstances of each review. For most reviews, the responsibilities for notification, access to information, and consultation are shared between the proponent and the EA Office.

5.2 CURRENT STATUS OF PROJECT REVIEW

Telkwa Coal Project Committee

Following receipt of Manalta's application, the EA Office took steps to set up a Telkwa project committee (the project committee) to steer the review of the proposal. Government agencies were invited to participate in the review of this project either through membership on the project committee or as a reviewer, providing written submissions. Active project committee membership entails the responsibility for the final recommendations regarding project certification. Those serving as a reviewing agency, while receiving all documents sent to the project committee, and providing written comment or submissions, are not responsible for final sign-off. However, all concerns raised by reviewing agencies must be appropriately considered by the project committee.

The project committee, consisting of federal, provincial and local government agencies and First Nations, began review of Manalta's documentation in March 1997, and held its first meeting in Smithers on March 11, 1997. One other meeting was also held on June 11, 1997.

At its March 11, 1997 meeting, the project committee determined that an ARD focus group would be established, comprised of provincial government staff with overlapping mandates or areas of interest and interested members of the public, to identify issues and concerns regarding ARD.

Attendees at meetings of the project committee included both formal members and observers (usually present in the capacity of technical advisors to formal agency representatives), while some government agencies are reviewing the project without participating directly in the project committee's proceedings. The involved parties are as follows:

Telkwa Coal Project Committee and Reviewer Agencies

(Project Committee Member = PC Reviewing Agency = R)

PROVINCIAL GOVERNMENT	Status (PC or R)
Ministry of Employment & Investment	PC
Ministry of Environment, Lands & Parks	PC
Ministry of Health	PC

Ministry of Small Business, Tourism & Culture (Archaeology Branch)	PC
Ministry of Transportation & Highways	PC
Ministry of Agriculture, Fisheries & Food	R
Human Resources & Children & Families	R
Municipal Affairs & Housing	R
Ministry of Forests	R
FEDERAL GOVERNMENT	
Environment Canada	PC
Canadian Environmental Assessment Agency	R
Canadian Coast Guard	R
Environmental Affairs	R
Department of Indian Affairs and Northern Development	R
Fisheries & Oceans Canada	R
LOCAL GOVERNMENT	
Regional District of Bulkley - Nechako	PC
Town of Smithers	PC
Village of Telkwa	PC
District of Houston	PC
AGENCIES, BOARDS AND COMMISSIONS	

Agricultural Land Commission	R
FIRST NATIONS	
Office of the Wet’suwet’en Hereditary Chiefs	PC
Broman Lake Indian Band	R

Purpose of Project Report

The project report is the primary detailed impact assessment submission required from Manalta under the EA process, and is prepared by Manalta at the second review stage, following review of an application for a project approval certificate during the first review stage. The application review stage is designed to identify issues, and thereby to establish the scope of the review.

The project report review stage is intended to determine whether or not identified problems are resolvable. Manalta’s project report is expected to contain an assessment of issues identified, and proposed mitigation strategies, and forms the primary basis for this determination.

At its June 11, 1997 meeting, the project committee concluded that the review of the Manalta application had revealed various unresolved issues with respect to the potential effects of the proposed development, and that consequently, a second stage of the EA process (the project report review stage) would be required. This stage would need to be completed before the project committee would be in a position to make recommendations to the Minister of Environment, Lands and Parks and the Minister of Employment and Investment about whether or not the project should be certified.

Scope of Project Report Specifications

The scope of project assessments conducted under the *EA Act* is defined by Section 1 of the EA Act which defines "effects" of projects to include "...environmental, economic, social, cultural, heritage and health effects..."

In view of this, the project committee, in drafting the project report specifications, exercises judgment about which issues require further reporting by Manalta in the project report. As part of the process of finalizing project report specifications, the project committee considers all of the representations received on both Manalta’s application, and subsequently, on the draft specifications.

In deciding which issues are to be addressed at the project report stage of review, the project committee is also guided by certain policy principles:

- reporting will be required in the project report only for issues which are not deemed to have been settled at the application review stage;
- the EA process, as a project-specific review mechanism, is not the appropriate forum for modifying existing public policy expectations or creating new operational requirements for developments which are under review - thus, requirements for Manalta to perform studies or to undertake project redesign need to be determined with reference to public policy expectations applied more generally to developments (whether or not the latter are subject to the EA process);
- reviews are conducted within the context of the prevailing land use; and
- planning regime (the land use policy environment for a project is simply one element of the broader public policy context for the review) - project committees are not expected either to anticipate future changes in land use designation or to suspend project review activity while land use planning is underway.

Preparing Draft Project Report Specifications

When a project report is required, the project committee first prepares specifications (or terms of reference) for the project report in draft form, taking account of review comments received on the initial application from the public, First Nations and federal, provincial and local government agencies.

In this case, the draft specifications were assembled on the basis of feedback received from the public on the Manalta application during a public comment period which extended from February 20, 1997 to May 5, 1997, and also from project committee members and other government agencies.

Finalizing the Project Report Specifications

Under the EA Act *Time Limits Regulation*, the intent is that the draft project report specifications are made public and placed on the project registry for a period of up to 30 days, during which the public is invited to comment on them.

Following expiry of the public comment period, the project committee finalizes the project report specifications within 20 days, taking account of public input. The finalized specifications are provided to Manalta as the framework for preparation of the project report.

5.3 NEXT STEPS

Preparing the Project Report

Manalta has been required to complete and submit a project report. At this stage in the EA process, Manalta continues to work on the studies necessary to complete the project report in accordance with the specifications. How long this process takes varies considerably from one project to another, reflecting factors such as the range of issues to be addressed, the availability of the necessary information, and the degree of urgency of Manalta.

The project committee has requested that Manalta, with the assistance of the project committee, continue to consult with the public, First Nations and review agencies as project planning and assessment proceeds. As well, Manalta will continue to work with the ARD Working Group and any other interministry focus group that may be established to assist the overall review.

Screening of the Project Report

When Manalta has completed and submitted the project report, it will be screened briefly by the project committee to ensure that it generally addresses the issues identified in the specifications, before being accepted for formal detailed review. However, screening is not an in-depth review of the technical content of the submission, and its acceptance for formal detailed review in no way implies tacit acceptance of the project.

Manalta, in preparing the project report, must comply with the project report specifications to the fullest possible extent. If the project report, when screened, is deemed to be incomplete, it will not be accepted for review, but instead will be returned to Manalta so that the deficiencies can be rectified.

Project Report Review and Decision-Making

Once accepted for formal detailed review, the project report will be circulated for public review and comment for a period of up to 60 days. Input received on the project report from the public, First Nations and local, provincial and federal government agencies will be taken into account by the project committee in concluding its review.

Based primarily on the review of the project report, the project committee must make recommendations to the Minister of Environment, Lands and Parks and the Minister of Employment and Investment (the Responsible Minister) on whether the project should be certified (with any necessary conditions), or denied a certificate, or subjected to a public hearing held by the

Environmental Assessment (EA) Board. The project committee recommendations are advisory, and are not binding on the two Ministers.

Public Hearing (optional)

If the two Ministers opt for a public hearing, they then develop draft terms of reference for the hearing, focusing the hearing process on what they consider to be the key outstanding issues remaining at the end of the project report review. They may also incorporate a reporting schedule for the hearing process into the terms of reference. The draft hearing terms of reference would be circulated for public review and comment for up to 60days, after which the Ministers finalize them and forward them to the Environmental Assessment (EA) Board.

Basis for Project Certification Decision

The policy intent of government is that project certification will normally be recommended by the project committee where all policy-type issues have been resolved, and all technical issues have been addressed in sufficient depth to satisfy the project committee that they can be managed effectively by proven affordable means. Where certain issues remain unresolved or where, for whatever reason, the project committee cannot agree on a recommendation, it may instead decide to present, for the consideration of Ministers, various possible decision options, together with an analysis of their pros and cons. In making a decision, Ministers will consider the potential benefits of the project, as well as the potential adverse effects.

Granting of Project Approval Certificate

A project approval certificate, if issued, would authorize the project to proceed, subject to any development restrictions or conditions, which may be imposed.

Project approval certificates are normally issued for the life of the development project, and have the flexibility to accommodate the staging and the scheduling envisaged for the development. However, in cases where development does not immediately proceed, a certificate does not remain in good standing indefinitely. The *EA Act* provides that a certificate expires if the development has not been substantially started within three to five years of certificate issuance (the exact term is indicated in the certificate). The *EA Act* does contain some time extension provisions in such circumstances, on application by Manalta.

Post-Certification Phase

Permits, Licenses and Other Approvals

If a project approval certificate is issued, Manalta will still have to obtain the various licenses, permits and other forms of statutory approval which are necessary to construct and operate the project. Applications for these approvals may be filed at any time (i.e. while the EA process is being conducted or after the project approval certificate has been issued), but completion of the processing of permit applications and permit issuance cannot take place until after a project approval certificate has been issued.

Concurrent Permitting

If Manalta applies concurrently for permits at the project report review stage, the intent would be that adjudication of permit applications would be completed, and decisions rendered by regulatory permitting authorities, within 30 days of the issuance of a project approval certificate.

Review of Future Proposals to Modify a Certified Project

If a project approval certificate and other necessary permits to construct and operate a project are issued, Manalta will be expected to develop the project in accordance with these regulatory approvals, unless modifications to the project have been lawfully approved.

If Manalta wishes to modify the approved project layout or design, or the approved manner in which it is to be constructed or operated, or wishes to expand the project by adding new components, Manalta must apply for approval from the appropriate authority(ies).

The review mechanism used to evaluate such applications will vary, depending on the nature of the modification or expansion. In principle, four situations could arise:

- where the modification is itself automatically reviewable under section 3 of the *EA Act*, the EA process will apply;
- where the modification is not automatically reviewable under section 3 of *EA Act*, it may be reviewable nonetheless if provision has been made, in the conditions of the project approval certificate, for EA review of that particular type of modification. This could occur, for example, where adherence to a particular feature of a project plan or approved management measure is considered critical to the public acceptability of the project; or
- where the modification is not automatically reviewable under section 3 of the Act, the Minister of Environment, Lands and Parks may elect to use his/her discretion under section 4 of the Act to designate the project modification to be reviewable, providing that the modification has not been substantially started; and
- where none of the above circumstances apply, the modification would normally be reviewable under the routine regulatory approval processes of relevant provincial, federal and/or local government agencies.

5.4 RELATIONSHIP OF EA PROCESS TO LAND USE PLANNING PROCESSES

The EA process is strictly a project-specific review mechanism. It has not been designed as a land use planning mechanism, and has no jurisdiction to perform this function.

The interface between the EA process and land use planning processes is that the EA process assesses projects within the context of the prevailing land use policy and planning framework of an area. Where a recognized land use plan exists, the EA process would evaluate the degree of compatibility of a development proposal with any specific land use planning objectives set in the vicinity of that development, whether set by the province or by local government. The weight given to this part of the assessment would depend on the status of the plans in question - Are they confirmed government policy? Do they have the force of law? Are they in the early development stage only, or still under discussion?

The EA process, in reviewing projects, is not expected to await the outcome of planning processes, which have yet to be completed. Review mechanisms such as the EA process and the Forest Practices Code will be employed to review proposed developments, taking account of the environmental and socio-economic implications of such development with respect to existing land use commitments.

Land Zoning

Manalta is proposing to develop the Telkwa project in the Bulkley Valley in an area that is a mix of rural agricultural lands, small acreage holdings and Bulkley District Crown forest lands.

The Regional District of Bulkley Nechako has zoned the project area and vicinity into rural land use zones. Much of the project area is zoned either as Rural Resource Zone (Pit 3), or as Large Holdings Zone (Pits 7 and 8). Portions of the loadout and eastern half of the access road right-of-way are in areas designated Agricultural.

A total of 1,597 hectares or 35% of the project area lies within the Agricultural Land Reserve (ALR). Manalta is seeking direction from the Agricultural Land Commission (ALC) on how to best deal with project lands within the ALR. Manalta will be submitting a Non-Farm Use in the ALR Application, or an application to exclude mine project areas from the ALR (pursuant to sections 22 and 14 of the *Agricultural Land Commission Act*), depending on finalized Reclamation Plans.

Portions of the project area lie outside the surveyed lands and within the Bulkley Valley Forest Reserve (BVFR) and therefore are not zoned by the regional district. Specifically, the Tenas Pit area, and portions of Pits 3 and 8 are within the BVFR, and are not zoned. BVFR lands are, however, subject to Ministry of Forests management codes and that ministry’s interests must be met in post-mining reclamation.

Presently, there are no zoning restrictions, with the exception of lands within the ALR that would limit mine development under the existing regional district zoning laws.

Bulkley Forest District Land and Resource Management Plan (LRMP)

The Bulkley Forest District Land and Resource Management Plan (LRMP) provides broad direction for sustainable use of Crown land and resources. The plan divides the Bulkley Timber Supply Area into six types or resource management zones, which will guide future management direction. Approximately 40% of the project is located on Crown land and is, therefore, subject to considerations of the LRMP.

The project area is located within three of the LRMP's zones, which are:

- Integrated Resource Management Zone (IRM)
- Agriculture-Wildlife Zone
- Special Resource Management Zone (SMZ)

The Tenas Pit area and portions of Pits 3, 7 and 8, the plant site and the tailings disposal area are located within the IRM zone. This zone allows for a full range of resource uses and activities, including mining. A portion of the proposed haul road and portions of the Pit 7 and 8 area are located within the Agriculture-Wildlife Resource Management Zone. This zone includes those Crown lands having good agricultural capabilities. Within the Agriculture-Wildlife Zone industrial activities are to be conducted with a view to enhancing the agricultural or wildlife capacity of the land. Land located along the northerly boundary of the Pit 7 and 8 area is within the Smithers Community Forest and, as a result, falls within one of the LRMP's special management zones. This zone recognizes the presence of key non-industrial values such as visual quality, wildlife habitat, recreation, and sensitive soils. Industrial use will occur within this zone but the impact of industrial activity on these key values must be minimized in order to receive approval.

A. GENERAL REPORTING REQUIREMENTS FOR THE PROJECT REPORT

A.1 Organization and Structure of the Project Report

The project report is to include:

- Maps, figures, graphics and tables:

- properly labeled;

- provided with appropriate legends and scales; and

- legible and of the appropriate size to display the information being illustrated.

· Applicable units of measurement used consistently throughout the document;

· Complete data tables (meaning all data discussed in the report) in print and in electronic format, including summary statistics for all data collected. When data is referenced in the project report, the location of raw data tables should be noted. When statistically derived data is used in the assessment of impacts, tables showing this data must also be referenced. Where appropriate, maps should be used to provide spatial context for the data and impact interpretations. Unbound versions of key maps should be provided for quick reference;

· Rationales for data interpretations explicitly stated and comprehensive;

· All laboratory and field QA/QC procedures and results. All QA/QC data generated, (including laboratory data) must be

interpreted and assessed in the project report so that judgments regarding the adequacy of the data for the intended purpose can be made; and

· Raw data from the various monitoring programs, sample calculations and the rationale on how this data was used to arrive at the various conclusions and recommendations.

Since the project report will be a complex and lengthy document, it is suggested that special attention be paid to organizing and cross-referencing sections and appendices, which are used to make inferences regarding potential impacts.

A.2 Scope of the Project

The following facilities and activities have been identified as reviewable components of the project:

1. Area identified as Tenas Pit and West Tenas Pit, south of Telkwa River (Pre-production and Phases 1-3)

2. Area identified as Pit 3 and Pit 3 satellite(s), south of Telkwa River

3. Area identified as Pits 7 and 8, north of the Telkwa River

4. Coal preparation plant located north of Pit 3 which includes:

- Coal handling area;
- Preparation plant facility; and
- Clean coal storage area.

5. Tailings disposal area located 1.4 km north of the coal preparation plant which includes:

- Tailings pipeline; and
- Waste rock ARD management (a number of options currently being considered).

6. Ancillary facilities which includes:

- Rail loadout facilities;
- Mine Service Complex which will include:
- Heavy equipment and service complex;
- Warehouse;
- Dry facilities; and
- Administration facilities.
- Powerline and proposed access road along powerline;
- Natural gas pipeline - 2,300m long, from existing junction to a station near the plant site;
- Water supply pumphouse downstream of Goathorn Creek;
- Prince Rupert coal terminal in terms of drainage containment /collection (only for the scope of the review);
- Fuel storage facility;
- Telkwa River bridge;
- 7.8 km long private access road from Lawson Road (Coal Haul Road); and
- site drainage works, clean water diversions and pollution control works.

B. SPECIFIC TECHNICAL, MINE DESIGN, RECLAMATION AND MANAGEMENT SPECIFICATIONS

Preamble

Most of the information requested in the following sections must be prefaced by a satisfactory strategy to prevent ARD, as this will largely determine mine waste handling and placement at the project. ARD prediction and prevention work will determine which materials can be left aerially exposed and which materials require flooding or other mitigation measures to prevent ARD. This information will determine which materials can be used for facility construction; which waste rock can be placed in 'blended' waste rock dumps; which waste rock must be subaqueously disposed of, or otherwise treated to prevent ARD; and whether or not all, or a portion of the tailings also require subaqueous disposal or other treatment. Comprehensive ARD prediction work, which has already been initiated, must precede and/or occur in conjunction with development of a more detailed mine plan.

B.1 MINE DESIGN/PLAN

The Ministry of Employment and Investment requests that Manalta provide mine design/plan information in relation to the following topics. This information assists to clarify the intentions of Manalta in relation to the mine plan, the configuration of pits, definition of coal reserves, potential underground mining, ARD prevention and mine closure. The information presented by Manalta in this section may become a portion of a future application for a mine permit.

Mine Plan

Information Required in Project Report

Specification - B.1.1:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, page 6, and the Ministry of Environment Lands and Parks, in correspondence dated May 30, 1997, page 4, Manalta is required to:

1. provide MEI with a conceptual level mine plan based on pre-certificate site investigations and planning. The items listed in the current draft of Appendix 1 of "Application Requirements for a Permit Approving the Mine Plan and Reclamation Program Pursuant to the Mines Act S.B.C. 1989, c.56" should be described at a conceptual level for the mine plan. Ensure that the mine plan shows all pits, dumps, infrastructure and diversion ditches, and treatment facilities at a 1:5000 map scale.

Coal Pits

Information Required in Project Report

Specifications - B.1.2 and B.1.3:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 5, 1997, page 3, Manalta is required to:

2. present pit outlines for Tenas Pit, Tenas West Pit, Pit 3, Pit 3 satellites and Pit 7/8 sections.

3. clarify the status of potential reserves previously identified by Crowsnest (pits 1, 2, 4, 5, 6 and Helps, etc.). While these pits may not have been studied in detail at this time, it is possible that these reserves may prove mineable at some future date, and therefore extend the life of the mine.

Sterilized Areas

Information Required in Project Report

Specification - B.1.4:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 1, 1997, Manalta is required to:

4. provide data and information to ensure that the location of the infrastructure does not affect future coal extraction possibilities. This relates specifically to the location of the plant site, tailings impoundment, waste dumps and potential access to underground mineable coal.

Geotechnical Work

Information Required in Project Report

Specification - B.1.5:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, page 7, Manalta is required to:

5. conduct and provide sufficient geotechnical site investigations prior to project report submission to ensure that proposed facilities will not require future relocation based on geotechnical concerns and to provide satisfactory assurance that facilities will function as proposed. This is particularly important for all proposed structures for ARD prevention, such as flooded tailings impoundment and flooded pits. Sufficient geotechnical site investigation and design work, as determined by a professional engineer, must be undertaken to demonstrate that structures can maintain sufficient water cover (according to criteria to be developed by the ARD Focus Working Group) and to address concerns regarding exfiltration.

Tailings Impoundment

Information Required in Project Report

Specification - B.1.6:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, page 7, and May 30, 1997, Manalta is required to:

6. present preliminary design work for the tailings impoundment in the project report, in conjunction with results of the geotechnical site investigations. Design of pits, dumps, and the tailings impoundment must demonstrate adequate stability for the site conditions, material properties and loading conditions. The construction specifications for plant facilities need to be based on the ultimate reclamation treatment. A flooded impoundment must be designed to ensure its operation in perpetuity.

Mine Sequencing

Information Required in Project Report

Specifications – B.1.7 and B.1.8:

As stipulated by the Ministry of Employment and Investment and the Ministry of Environment Lands and Parks, in correspondence dated May 26, 1997, page 7, and August 18, 1997, Manalta is required to:

7. provide maps (1:5000 scale is preferred, but not required) projecting mine development at early, mid-development and at closure. It is recommended that at a minimum, the selection of the years "in between" be based on pit development. Early, mid-development, and closure configurations should be shown for all of the major pits (i.e. Tenas, Pit 3 and Pits 7 and 8, plus the "Helps Pit", if this is shown to be part of the proposal based on the 1997 drill program) and associated waste rock dumps/facilities. The maps must be accompanied by text clearly describing the sequence of mine development. Sufficient detail must be provided to clarify the actual development sequence, including any proposed "overlap" of pit development.

Geological Information

Information Required in Project Report

Specification - B.1.8:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

8. provide all geological information relevant to the ARD assessment. Information is also required regarding structural geology and how it affects the pit slope designs. What is known about the major and minor structures? To determine the competence of the rock and tendency to break down, Manalta needs to determine what the alteration is and what the implications for geotechnical stability are. To assist in determining pit wall stability and dump design, Manalta is asked to detail the implications to dump design.

B.2 RECLAMATION PROGRAM

The Ministry of Employment and Investment requests that Manalta provide reclamation program information for the items listed below. Conceptual reclamation plan information is required to enable reviewers to determine if the proposed mine plan and reclamation program will satisfy requirements under Part 10 of the "Health, Safety, and Reclamation Code for Mines in BC". Detailed reclamation planning information will be required for *Mines Act* permitting, should the project receive a project approval certificate under the *EA Act*.

Reclamation Plan

Information required in the Project Report

Specifications - B.2.1 to B.2.4:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, page 7-12, Manalta is required to:

1. provide conceptual reclamation planning information to "match" the mine planning information for early, mid-development and at closure. The maps must be accompanied by text describing interim (e.g. erosion control) reclamation objectives or proposed end land use(s), and the means by which reclamation activities will achieve those end land use(s). This should be supported by information on soil conditions, natural plant succession, and the species Manalta plans to establish;

2. provide information describing soil salvage and replacement, and any requirements pertaining to ARD;

3. provide as much detail as possible on the following requirements for soil handling and salvage and stockpile requirements:

a) Soil Handling Plan

· provide as much detail as possible regarding soils handling. The reasons for this relate to the high level of public and other concerns regarding reclamation, aesthetics, and achievement of end land uses (and consequent impacts to current land uses). Site "soils" may also become part of the ARD site prevention/mitigation strategy, and must therefore be adequately surveyed and quantified.

b) Salvage Requirements

- descriptions of the soils (or suitable overburden) to be salvaged;
- what materials or layers to strip separately and how to operationally distinguish them;
- total depth to be salvaged;
- erosion control and sediment retention measures required for exposed surfaces; and
- anticipated volumes of each soil type.

c) Stockpile Requirements

- description of conceptual soil stockpile locations and volumes;
- what layers or materials are to be stored separately, and why;
- storage requirements, including erosion control and sediment retention;
- descriptions of stockpile treatments during the storage period; and
- identify opportunities for direct hauling, because of the benefits that this can provide in maintaining the biological integrity of the soils.

4. provide a conceptual final reclamation plan for the closure or abandonment of the project. This plan must be in reference to, and consistent with, parts 10.5 and 10.6 of the *Code*. Specific reclamation objectives and methodologies for all site facilities must be provided.

The following are minimum requirements for inclusion in the plan:

a) End Land Use Objectives

- clearly identify end land use objectives for the minesite and mapped at 1:5000 or better. The map(s) should overlay the closure configurations of the pit(s), tailings, waste rock dumps, and any other facilities to remain following closure. The text must describe the means by which the proposed reclamation program will achieve the end land use objectives;
- achievement of these objectives should also be clearly reflected throughout the reclamation and mine plans, and should be an integral part of operations throughout the mine life; and
- should a Reclamation / End Land Use Working Group for the Telkwa project be established, Manalta is requested to work with the Working Group on an as needed basis to determine the “best” end land uses for this site.

b) Productivity or Capability Objectives

- identify the general means by which productivity or capability objectives will be achieved, and the specific yardsticks by which reclamation success will be measured or determined, for each of the specified end land use objectives.

c) Long-term Stability

- address the long-term stability, both physical and chemical, for all structures and discharges from the minesite. This includes a description of the major design assumptions to be used for major facilities (e.g. the tailings impoundment) and proposed post-closure monitoring and maintenance. Structures or design features required for long-term ARD prevention (such as the flooded tailings impoundment and blended waste rock dumps) require special attention in this description.

d) Treatment of Structures and Equipment

- specify what structures and/or equipment would remain in place following mine decommissioning, and what, if any, reclamation treatments are proposed.

The information requirements for the following sections on waste dump, tailings and pit reclamation are prefaced with the observation that ARD prevention will largely determine waste handling for the project. The applicability of the following general requirements may be constrained by requirements related to ARD prevention, although it may be possible to achieve both. ARD prevention is expected to largely determine the configuration of the tailings impoundment. Also, significant changes to the application pit reclamation proposals may occur as a result of ARD prevention requirements.

---

e) Waste Dump Reclamation

- describe waste rock dump reclamation, including anticipated final configurations, proposed re-sloping, post-closure water management and earthquake design, surface treatment to alleviate compaction, details of soil replacement, a description of proposed revegetation methods, and long term monitoring and maintenance requirements. Conceptual post-mine cross-sections must be provided along with a map illustrating section locations. If possible, conceptual three-dimensional views of the final dump configurations should be provided. In general, short dump lifts (50 m or less) are encouraged. Dumps must be designed to accommodate the proposed end land use(s), and to allow for proper placement and retention (through hydraulic and geotechnical management) of salvaged growth media. The Ministry of Employment

and Investment considers resloping to 2:1 or less to generally be a minimum requirement for ensuring that adequate quantities of growth media can be properly placed (2.5:1 or 3:1 are preferred for placement of large soil volumes). The Ministry encourages creative design of waste dumps to optimize snow/water retention (where appropriate), habitat diversity and aesthetic consistency with the adjacent landscape.

f) Tailings Reclamation

- describe proposed tailings reclamation in detail, including the anticipated final impoundment configuration, any proposed resloping, post-closure water management and earthquake design, details of soil replacement on tailings dam faces (if not constructed with suitable growth media at surface) and the impoundment surface (if it is not to remain flooded following closure), a description of proposed revegetation methods, and long term monitoring and maintenance requirements.

g) Pit Reclamation

- describe whether or not the pits (or portions) will be flooded at closure and if so, details of water quality and any discharges to the receiving environment. Any reclamation/revegetation measures to be undertaken within the pit area must be described.

h) Watercourse Reclamation

- provide details of the re-establishment of post-mine watercourses and minesite water management.

i) Road Reclamation

- make provision to reclaim roads where applicable (i.e. most locations unless there is a specific elevation, terrain or other exemption agreed to by the Chief Inspector) and decommissioned to ensure geotechnical and hydraulic stability. There may be reasons for some site roads to be retained post-closure - such as linkages to the proposed Telkwa River bridge. Preliminary identification of roads to be exempted from reclamation requirements is expected to be made during the course of the project review.

j) Trace Elements in Soils and Uptake in Vegetation

- outline a proposed baseline and monitoring program to assess trace element uptake in soils and vegetation at mine closure, and where possible, during the mine life.

k) Operational and Post-Closure Monitoring

- provide conceptual long term monitoring plans for flooded structures, such as the tailings impoundment (as currently proposed). Note that long-term monitoring may be required for geotechnical, ARD, trace elements, revegetation, sedimentation or other requirements depending upon the site and closure plan.

B.3 CONSIDERATION OF ALTERNATIVES

The Ministry of Employment and Investment requests that Manalta consider the following alternate approaches to aspects of its project. The alternatives are intended to ensure that Manalta has considered other options and that they have been reviewed for their merit by the project committee. These requests for information regarding alternatives are in response to issues raised by the public, and pursuant to section 22(b) of the EA Act.

Information Required in Project Report

Specifications - B.3.1 to B.3.5:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 1, 1997, Manalta is required to:

1. consider alternatives to the coal haul road including conveyor and coal slurry pipeline with dewatering at load out. Traffic to and from the load out is a concern due to potential dust and noise impacts;

2. consider bringing in a construction camp for the construction work force. Consider the location and servicing of the camp;

3. review the public road crossing of the Tenas Pit haul road as proposed in the access road to Hunter Basin proposal to determine if an alternative route could be found. Alternatives could include an overpass or underpass for public traffic to ensure separation from mine traffic;

4. consider sequencing smaller pits, currently identified in the application as "resource areas" to accommodate storage of tailings, which may reduce, or eliminate the need for a large, permanently flooded tailing impoundment; and

5. consider alternative loadout locations.

C. ENVIRONMENTAL, RESOURCE MANAGEMENT AND TECHNICAL SPECIFICATIONS

C.1 ENVIRONMENTAL BASELINE, IMPACT ASSESSMENT AND MITIGATION

The Ministry of Employment and Investment and the Ministry of Environment, Lands and Parks requests that Manalta give consideration to the following environmental baseline data needs. The identified baseline information is intended to supply a definable base against which the project can be monitored into the future, should it be approved. This will assist Manalta and regulatory agencies to determine if Manalta is exceeding, meeting, or falling below permit conditions.

Climate

Information Required in Project Report

Specifications - C.1.1:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

1. provide a detailed description of the present and historic (as available) local climate, including temperature, precipitation and wind information.

Topography and Surface Drainage

Information Required in Project Report

Specifications - C.1.2:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

2. describe pre-mine topography and surface drainage features and map both at a scale 1:5000 or better for the minesite (i.e. mine "footprint"). The maps should show drainage divides, areas of groundwater discharge, wetlands and notable topographic features. Accompanying descriptions should show the range of pre-mine slope configurations and some typical slope cross-sections. Additional regional mapping at a suitable scale should also be provided, showing the Telkwa River drainage basin to the height of land on both sides of the river from the confluence with the Bulkley River to a point upstream of all proposed development works.

Soils Mapping

Information Required in Project Report

Specifications - C.1.3 to C.1.6:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

3. provide soils mapping for the mine development "foot-print" only at a scale of 1:5000. The mapping should extend sufficiently beyond currently proposed development areas to accommodate any potential changes in the development proposal (e.g. changes to waste rock dump configurations. Manalta is advised to consult with MEI regarding mapping boundaries;

4. complete surficial geology and terrain mapping at a scale of 1:5,000 using the Terrain Classification System for British Columbia (Revised Edition), 1988, MELP Manual 10 following the "Guidelines and Standards to Terrain Mapping in B.C.", 1996, compiled for the Resources Inventory Committee (RIC). The mapping must use the standard Terrain Unit Symbol when identifying landforms. The symbol includes the texture, surficial material, qualifying descriptors, surface expression and the geological process. Where the texture of the surficial deposit is suitable for revegetation, particular attention must be paid to the depth of the deposit, so that the area can be identified for potential soil salvage;

5. map inorganic and organic soils (or minimum upper one meter of surface materials, whichever is greater), at a scale of 1:5,000 using the 1996 edition of MELP's "Field Manual for Describing Terrestrial Ecosystems" (update to MELP Manual II) and append the soil profile descriptions. Particular attention must be paid to the rooting depth, drainage conditions, soil texture, soil structure, coarse fragment content and impediments to soil capability. In order to facilitate determination of soil salvage requirements, the rooting depth, soil horizon, and depth to growth impediments must be compiled in a tabular form for each profile in each soil management unit; and

6. map land capability at a scale of 1:5000 using the "Land Capability Classification for Agriculture in British Columbia", MELP Manual 1 (Kenk and Cotic).

Terrestrial Ecosystem Mapping

Information Required in Project Report

Specifications - C.1.7 and C.1.8:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

7. complete Terrestrial Ecosystem Mapping (TEM) for the "mine footprint" area at a scale of 1:5000 or better (requiring a survey intensity level of 1). As is the case with the soils mapping, Manalta is advised to consult with MEI and MELP regarding mapping coverage. The TEM must be accompanied by an expanded legend report describing all Ecosections, Biogeoclimatic Units and Ecosystem Units. For ecosystem units, all potential successional or structural stages and changes in plant species composition should be described. Wildlife use and values for the study area should also be described. Polygon data forms and detailed plotsheets following "Field Manual for Describing Terrestrial Ecosystems" must be submitted; and

8. provide baseline information in relation to trace element uptake by vegetation. Selected vegetation species must be sampled to document pre-mine trace element levels. Iterative consultation with MEI is suggested in the design and implementation of the vegetation sampling program. The species selection will depend largely on the choice of end land use(s).

Land Ownership and Use

Information Required in Project Report

Specifications – C.1.9:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

9. provide 1:5000 scale mapping showing details of pre-mine land ownership and use within the mine development area. Surrounding areas may be mapped at a convenient scale. Information which should be provided includes surface and mineral rights; licensed or permitted users such as forestry or agricultural operators, guides, outfitters, and trappers; Regional zoning and boundaries of the Agricultural Land Reserve (ALR), Smithers Community Forest, Enhanced Timber Areas, Core Ecosystem Areas, Landscape Corridors, and the Bulkley Valley Forest Reserve (BVFR). Any available updated mapping of the Bulkley Long Range Management Plan (LRMP) should be provided. Any informal users who are not necessarily licensed (e.g. First Nations or recreational users) must also be described. Approximate locations of proposed mine facilities (e.g. pits, waste dumps, plant site) should be overlaid on the above referenced maps.

End Land Use

Information Required in Project Report

Specifications - C.1.10:

As stipulated by the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

10. map existing land capabilities for proposed or potential end land uses at a scale of 1:5000 or better for the mine development area. Therefore, in addition to the Land Capability for Agriculture mapping, land capability mapping is required for wildlife and forestry (i.e. based on proposed end land use information contained in the Application). Wildlife capability mapping must follow "Standards for Wildlife Habitat Capability/Suitability Ratings in British Columbia - Review Draft". Determination of target wildlife species for capability interpretations must be made by Manalta in consultation with MEI, MELP, and local First Nations.

C.2 AIR QUALITY AND GREENHOUSE GAS EMISSIONS

Air Quality

Impacts to air quality due to release of dust associated with coal extraction, hauling and loading for offsite shipment by rail was raised as a serious concern at the public meeting in Telkwa, March 11, 1997.

Impacts of the mine on human health resulting from degradation of air quality must be predicted utilizing an acceptable air quality model. In addition, nuisance dusting impacts must also be predicted and described in terms of potential frequency and severity. This should include a description of conditions documented at other coal mines, as well as site specific interpretations of site specific data.

The human health impact assessment must include an acceptable model based on site specific meteorological and inhalable particulate (PM10) loading and dispersion data. The model must be used to predict the frequency and severity of excursions of provincial PM10 objectives for the protection of human health. The area of focus for the model should include populated areas in the vicinity of the project, including Telkwa, Quick and Smithers. It is anticipated that PM 2.5 monitoring will be a MELP requirement in the near future and it would be prudent to include it in the baseline study.

This work is to be carried out by a qualified consultant with experience in air quality modeling and impact assessment. Guidance in the development of the predictive modeling exercise can be found in the November 1996 Addendum to the Fording Coal Greenhills Operations Project report titled, *An Evaluation of Air Quality In Elkford and the Effects of the Proposed Greenhills West Spoil*. This document is available through the BC Environmental Assessment Office (EAO). Additional information regarding the design of a baseline data collection and impact assessment monitoring program is provided in MELP's May 21, 1997 memo from Johnson to Demchuk.

It is necessary for Manalta and regulatory agencies(MELP and MOH) to agree in a written protocol to the course of study aimed at assessing potential impacts of inhalable particulates originating from mining operations.

Information Required in Project Report

Specifications - C.2.1, C.2.2 and C.2.3:

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 2-3, Manalta is required to:

1. identify potential toxic effects of contaminants deposited from airborne sources on human health, livestock, wildlife and aquatic life caused by mining, stockpiling and handling of coal for transport. Of particular concern is the potential effects inhalable particulates on human health;

2. identify potential nuisance impacts of airborne dust on property from mining, trucking, stockpiling and handling of coal for shipment; and

3. develop a mitigation plan to minimize dusting and impacts on adjacent communities.

Greenhouse Gas Emissions

In 1992, Canada was one of the first countries to ratify the United Nations Framework Convention on Climate Change and committed to stabilize greenhouse gas emissions at 1990 levels by the year 2000. To date more than 150 nations have followed Canada's lead. In November 1995, British Columbia released the BC Greenhouse Gas Action Plan which outlines actions that will be taken by the province to move toward the goal of stabilizing provincial emissions at 1990 levels by the year 2000.

It is anticipated that the next conference of the parties to the Framework Convention, to be held in Kyoto, Japan in December 1997, will see consensus on the need for legally binding targets for post-2000. Emerging negotiating positions for Kyoto suggest that stabilization at 1990 levels by 2010 is a possible scenario. At present it is likely that Canada will miss the year 2000 target by more than 8%. British Columbia was more than 15% off the target in 1995 and, due to increased fossil fuel use, is projected to be more than 35% over the 1990 target by 2010.

The likelihood that most countries will miss the target, combined with the distinct possibility of a legally binding agreement indicate, that proactive, comprehensive action is prudent. The province's greenhouse gas policy will be evolving rapidly over the net year as a result of actions already underway domestically and internationally. Any action that can be taken in the interim will assist the transition from the status quo to the post Kyoto period. Environmental assessment is one key policy tool that can be used to ensure that major new emitters of greenhouse gases plan prudently for response to this global issue.

MELP will be requesting that proponents of mining and industrial projects reviewed under the *EA Act* provide estimates of greenhouse gases emitted during operational activities and prepare greenhouse gas mitigation plans. This does not however include the emissions of greenhouse gases from the off-site consumption of coal.

Information Required in Project Report

Specifications - C.2.4, C.2.5 and C.2.6:

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated August 15, 1997, Manalta is required to:

4. provide an estimate of tonnes of carbon dioxide released from operation activities including haul trucks, loaders, washplant and other equipment and facilities used for coal mining, preparation and transportation;

5. provide estimates of releases to methane gas resulting from mining activities; and

6. prepare a mitigation plan, outlining means of reducing emissions of greenhouse gases and any voluntary measures such as offsets.

C.3 ACID ROCK DRAINAGE AND METAL LEACHING

General Project Report Requirements

The potential for acid rock drainage/metal leaching (ARD/ML) and the resulting impacts on the water quality of the receiving environment is the major environmental concern associated with the proposed development. ARD occurs when sulphide minerals associated with the coal and the host rock are exposed to air and water and oxidized to form acidic conditions. In the presence of this acidity, metals become more soluble and may be leached from the rock. Excess water is required for the transport of reaction products.

ARD/ML may be associated with the exposed pit walls, waste dumps, coarse refuse, tailings and coal stockpiles. Manalta's Application provided a preliminary assessment of the ARD potential for all mine components and identified a number of mitigative strategies to minimize ARD to a level that, Manalta believes, will not pose a significant impact or risk to the receiving environment. However additional information is required prior to a certification decision.

The information requirements described below are based on current information and understanding of the project proposal. Further information requirements may be necessary as more details become available. Conversely, some requested information may no longer be necessary as the project evolves. It is the expectation of the project committee that the evolution of this project will be iterative.

The following acid rock drainage and metal leaching (ARD/ML) specifications are presented in two parts. Specifications C.3.1 to C.3.44 were developed by the ARD Working Group in conjunction with the project committee. The Working Group provides an arena within which key agencies could discuss and develop the information requirements for ARD and provide advice to the project committee. The Working Group is composed of technical experts from the Ministry of Environment, Lands and Parks and the Ministry of Employment and Investment and members of the public with knowledge and interest in this area. The Working Group issued a draft report, containing its recommendations for information requirements to the project committee on July 2, 1997. That draft, and subsequent refinements, form the basis of specifications C.3.1 to C.3.44.

Specifications C.3.45 to C.3.48 were submitted by the Ministry of Employment and Investment and focus on that ministry's requirements for ARD/ML reporting.

Manalta is required to address the ARD/ML specifications submitted by both the ARD Working Group and the Ministry of Employment and Investment.

Information Required in Project Report

Specifications - C.3.1 to C.3.5:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

1. provide in a clearly identifiable and well organized manner the raw data from all relevant baseline studies, predictive testing and mitigation planning. Provide examples of sample calculations and clear interpretations of all collected data;

2. define the factors which will determine the various options for the ongoing mine production rate. What will be the resulting impacts on the project design, (waste handling and blending ability, mine life, infrastructure construction, rail/truck volume, coal stockpiles, impacts to the area, etc.) from the different production rates;

3. incorporate all of the 1996 and available 1997 drillhole data for Pits 3, 7, and 8, Tenas and the satellite pits and include this information in the mine design presented in the project;

4. provide a detailed description of the mine sequencing and materials handling throughout the life of the mine. This information is to include:

- **overburden removal and disposal,**
- **pit waste and coal extraction sequencing, (vertically and horizontally),**
- **depth of pits,**
- **waste removal and disposal, (blending, segregation, sources, volumes, etc.),**
- **construction material acquisition; and**

5. delineate materials to be used for infrastructure construction (dams, roads, etc.). Include materials sourcing, locations, volumes, ARD/ML and physical test characterizations and materials handling and scheduling.

Acid Rock Drainage and Metal Leaching Assessment

Information Required in Project Report

Specifications - C.3.6 to C.3.17:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

6. provide a general comparison of the geology of the Appalachian deposits and the Telkwa deposits, and a comprehensive discussion of the geology of the Telkwa deposits and its relationship to ARD/ML potential for all of the geologic units which will be disturbed during the mine development. Include mineralogy, facies changes, material volumes and the relationship between the geology and the mine development;

7. provide clear, concise cross-sections which relate the ARD/ML assessment (static/kinetic sample locations), geology and development plans (e.g. final pit outline);

8. provide plan views of the site relating the geology, mine infrastructure, drill hole locations and the cross-section locations;

9. delineate the geological structures (e.g. faults) in the project area that may affect the proposed infrastructure, (open pits, waste rock dumps, tailings impoundment, coal stockpile(s), plant site, etc.) and their potential effect on the proposed infrastructure and mitigation measures;

10. describe the static and kinetic testwork conducted and detail any future programs. This is a critical component of the project report and must include:

- **rationale for, and description of, sample selection,**
- **methodology for all testwork,**
- **raw data for all of the testwork, properly identified and clearly tabulated,**
- **static ARD/ML tests of sufficient frequency to define the ARD/ML potential of all materials to be disturbed, created or exposed (e.g. overburden, waste rock, coal, coarse rejects, and tailings, and construction materials),**
- **kinetic characterization of the critical lithological units and waste/exposure types associated with each of Pits 3, 7, 8 and Tenas Creek, (as well as the satellite pits), tailings material, coarse coal rejects, construction materials, pit walls and any other material which will be disturbed or exposed during the mining operation,**
- **kinetic test programs of sufficient detail to identify reasonable worst case and median case scenarios as determined by the ABA information unless the rationale for not doing so is substantive enough to preclude their necessity, and their exclusion is agreed to by the ARD working group prior to the submission of the project report. The testwork is also to include leaching under neutral conditions;**

11. ARD/ML assessment must include pH, total sulphur, percent sulphide sulphur, percent sulphate sulphur, AP, NP, NNP, NPR, range, average, median, tenth and ninetieth percentile and standard deviation;

12. identify and quantify the mineralogical sources of neutralizing potential within each of the major geological units. Differentiate between calcium/magnesium carbonate NP and other forms of NP. Conduct kinetic testwork on proposed NP sources to determine the availability of NP and its rate of production under the expected geochemical conditions;

13.describe the leach pad samples in detail. Include: pad construction, waste rock identification and geologic correlation, sample characterization, sampling program, results and assessment. Compare the historical workings stratigraphic sequencing, (e.g. Forestburg), with the materials to be excavated in the current mine plan and discuss sample similarities and differences. Determine the amount of till which may have been incorporated into the leach pad and the extent to which the waste/till material may have been weathered;

14. provide graphical representation of the information collected during the ABA and kinetic testwork, (e.g., NPR distribution for the sample population from ABA tests, parameter trend assessment for kinetic test results, etc.);

15. determine the metal leaching potential of the disturbed or exposed materials by identifying the elemental composition for different materials, elements of possible concern under the expected geochemical conditions and an assessment of the soluble constituents;

16. evaluate the probability of ARD/ML occurring, describe the resulting mine plan, and present a feasibility summary by applying a reasonable range of geochemical thresholds (NPRs) to the ARD/ML data collected for the Telkwa Coal Project; and

17. all threshold geochemical indices used to evaluate/predict ARD/ML and determine material handling procedures are to be justified by site specific prediction data. Where indices are used from other geographical areas, detailed supporting evidence, (including the raw data where possible), is to be provided.

Overburden

Information Required in Project Report

Specifications - C.3.18 to C.3.19:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

18. identify the various overburden types and their relationship, volumes, location, use and ARD/ML potential. Include quantification of available NP sources. Describe if there is a portion chemically and/or physically unavailable under the expected reaction conditions; and

19. assess parameters of relevance to drainage, cover performance and dump stability (e.g. hydraulic conductivity, particle size, etc.) where overburden may be covered by mine waste or used as cover material.

Waste Rock

Information Required in Project Report

Specifications - C.3.20 to C.3.22:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

20.characterize the waste rock to be exposed in terms of waste rock generation and mine sequencing, ARD/ML potential, mitigation strategies, disposal options and the ability for long-term closure of the site. Include the rationale and details for all proposed waste rock disposal options. This must be a comprehensive and inclusive assessment which considers coal losses, and the removal of waste rock and till for construction;

21.accurately define the various waste units in terms of practical management units. The characterization is to focus on static and kinetic information with the intent to quantify practical segregation strategies and various blending scenarios (e.g.; impact on dumps if all of the green sandstone was segregated and disposed of separately; impact of cleaner coal seam contacts on dump ratios, etc.). The focus is to be on management scenarios which are achievable over both the short and long term; and

22.describe the various management systems to be utilized for materials handling at the minesite, (e.g. GPS, ISO, etc.), how they will be implemented and examples of their usage.

Tailings Impoundment

Information Required in Project Report

Specification - C.3.23:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

23. provide design details for the tailings impoundment for the range of production rates.

Coal Resources

Information Required in Project Report

Specifications - C.3.24 to C.3.30:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

24. estimate the volume and ARD/ML characteristics of the unmineable coal seams within each proposed pit. Evaluate their effects on the ARD/ML characteristics of each of the waste dumps, discharge water quality and possible handling and disposal scenarios;

25. evaluate the options for disposal of coal seam cleanings. Describe the impacts on the tailings facility if the coal seam cleanings were to report to the tailings impoundment;

26. describe which coal seams will be mined and which seams will be left behind (either in-pit or as waste);

27. determine the expected mine life under the various production scenarios;

28. define the potential impact on the ARD/ML potential of the waste dumps and discharge water quality of the 11% coal waste unrecovered from the mined coal seams. Address different methods to practically reduce the coal loss, (e.g. smooth bucket vs. toothed bucket to clean coal contacts), and the gains which may be achieved regarding the ARD/ML potential of the waste dumps;

29. assess the various on-site coal stockpiles in terms of:

- **static and kinetic tests to determine the time to onset and severity of oxidation and its impacts on drainage chemistry,**
- **assessment of the volume and quality of the runoff,**
- **impact of runoff on the tailings supernatant water quality, pit water quality or receiving environment;**
- **ability to clean the coal after oxidation processes have occurred,**
- **impact on the closure plan in the event that coal cannot be processed,**
- **operational plans for the collection and containment of the drainage,**
- **contingency plans for the permanent disposal of any remnant stockpiled coal; and**

30.assess and describe the Prince Rupert coal terminal's capacity to accept the Telkwa coal and its ability to contain, collect, and if necessary treat drainage from the coal. Predict quality and quantity of drainage and define the length of time the coal will be exposed at the terminal and compare with the time lag to acidic drainage onset.

Dump Construction and Blending

Information Required in Project Report

Specifications - C.3.31 to C.3.36:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

31. provide a detailed materials handling plan which describes and illustrates how the degree of waste dump blending required to achieve the stated ARD/ML objectives will be achieved in each phase of each pit development;

32. provide examples of operating mines (or well documented past producers) that best demonstrate how adequate blending is achieved that ensures water quality standards are met in both the short and long term, by end-dumping or other management strategies proposed. The comparison should assess sites with dumps approximating the scale to be constructed for the project. Compare and contrast end-dumping with other possible methods of blending;

33. provide profiles for each of the proposed waste dumps showing current topography, waste construction, operational dumps and final dump height and configuration;

34. provide detailed design specifications, (volume, thickness, frequency, source, etc.) for the proposed intermediate and final till caps;

35. identify the sources and economics of off-site neutralizing materials, (if required), to supplement the operation; and

36. describe dump material composition, predicted drainage quality/quantity, mitigation measures, dump configuration and dump hydrology. Include drainage collection and the separation of dump surface run-off from dump seepage.

Construction Material

Information Required in Project Report

Specification - C.3.37:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

37. characterize the waste material to be used for infrastructure construction, (roads, tailings impoundment, berms, etc.). Include ARD/ML testwork, material volumes and sourcing, and the impact that the removal of this material will have on the ability to achieve the characteristics of the blended dumps as proposed.

Hydrological Considerations

Information Required in Project Report

Specification - C.3.38 to C.3.43:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

38. provide a detailed water balance for the coal processing plant, pits, tailings impoundment and any other associated infrastructure. This assessment is to consider the mine development and its impacts on the water balance; (e.g.; pre-wash plant, during coal processing plant operation, closure). Include the primary and contingency water sources and assess the impacts of usage on these water sources;

39. predict the surface run-off rate, predicted quality, control and mitigation strategies for surface run-off from the various mine components, (e.g. pits, waste rock dumps, stockpiles). Provide measures to separate clean and potentially contaminated drainage and to prevent erosion and sediment discharge;

40. profile each pit illustrating the levels to which flooding can be achieved based on hydrology and the pit/waste dump designs and contours. Include seasonal variability of flooding levels. Provide contingency measures for the inability to flood the in-pit waste dumps;

41. identify, map and characterize the various faults located in the pits and the extent of the faults beyond the confines of the pits. Assess the impacts on ARD/ML prevention and collection and include any information regarding the discharge of water from these fault zones (rates, quality, etc.), loss of drilling fluids into the faults during exploration and the size, width and extent of the faults. Detail the surface extension of the faults as they relate to the completed pit developments, (e.g. where would the fault be on the pit floor or highwall and how it relates to the in-pit water levels). Assess the hydraulic connection between the pits (and other mine components) and the adjacent water courses;

42. provide details on the additional water requirements necessary to maintain the tailings and coarse rejects permanently under water. If exposure is expected, kinetic testwork is required which will be used to determine an acceptable exposure period; and

43. provide a detailed assessment and prediction for all site water discharges. This assessment must include volumes, water quality, discharge structures and locations, potential impacts on the receiving environment and the description of any treatment processes. Describe contingency plans for excessive run-off events and drought conditions.

Collection and Treatment

Information Required in Project Report

Specification - C.3.44:

As stipulated by the ARD Working Group in it's July 2, 1997 report and in subsequent refinements, Manalta is required to:

44. where ARD collection and treatment is required or is proposed as a contingency measure, provide detailed information on collection capability (liners, etc.), treatment system design, sludge handling, sludge storage, sludge stability, lime procurement, and all required maintenance and monitoring. This assessment is to include reasonable median and worst case inflow and outflow, and prediction of water quality and contaminant loadings. The proposal for a collection and treatment system must demonstrate that:

- preventative methods have been examined and are determined to be technically or economically unfeasible,
- the collection system will collect all necessary drainage. An accurate assessment of both the surface strata and site

hydrology will be required to verify this. This must include a geotechnical evaluation to ensure there will be no significant exfiltration from ditches and ponds,
- the treatment system will allow the mine to meet discharge and receiving environment requirements,
- segregation, covers and diversion are used to the degree possible to minimize the amount of metal leaching,
- land-based or subaqueous deposition of treatment sludge is both physically and geochemically secure,
- collection and treatment is an acceptable and viable long term land use for the site,
- impacts on post-closure land use objectives from the collection and treatment of contaminated drainage and the creation of treatment sludge have been determined,
- a collection system can be constructed and operated in a manner that ensures there is minimal risk (likelihood of occurrence and consequences) to the environment, and the system can be maintained for as long as is necessary. The supportive evidence must include detailed engineering and economic analysis, including consideration of relevant biological factors, and a comprehensive risk management plan to show that environmental values will not be jeopardized. Economic sensitivity must be considered. This should include consideration of possible failure mechanisms and their consequences, and back-up protection commensurate to the potential for failure and the risk to the environment. Where standard procedures are potentially inadequate, the project report should include all necessary instructions for construction, operation, monitoring and maintenance, and
- the costs and resources required to build and operate collection, treatment and sludge disposal systems, (including post-closure operating, monitoring and maintenance costs) are itemized.

In addition to the information requirements of the ARD Working Group, the Ministry of Employment and Investment submitted the following requirements August 26, 1997.

The Ministry of Employment and Investment's generic expectations and information requirements for ARD/ML prediction and prevention are outlined in the following draft documents:

- Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in

British Columbia, April 1997; and

- Guidelines and Recommended Methods for the Prediction of Metal

Leaching and Acid Rock Drainage at Minesites in British Columbia, July 28, 1997.

General Assessment Requirements

Information Required in Project Report

Specifications - C.3.45 to C.3.46:

As stipulated by the Ministry of Employment and Investment, in correspondence dated August 26, 1997, Manalta is required to:

45. conduct sensitivity analysis to determine the impact on the receiving environment of possible inaccuracies or changes in prediction and prevention and to determine the impact on ARD/ML mitigation of possible modifications in the form and rate of mining. Factors to be addressed include the capacities of the various forms of waste storage, the ability to achieve the required blending, the availability of the required cover materials and the availability of construction materials. The results of the sensitivity analysis will be used to set constraints on regulatory approvals and permitted waste handling and deposition, to determine if further testwork is required and to suggest if and where contingency protection measures are necessary; and

46. reduce the uncertainty associated with ARD/ML to a level at which the potential liability can be identified and effective impact prevention strategies can be selected. This requires a prediction of both the most probable and the potential for any unacceptable conditions or performance.

Geotechnical and Hydrology Issues

Geotechnical, hydrology and water management considerations are critical to the effectiveness of many of the proposed mitigation strategies.

Information Required in Project Report

Specifications - C.3.47:

As stipulated by the Ministry of Employment and Investment, in correspondence dated August 26, 1997, Manalta is required to:

47. provide baseline information and plans that ensure perpetual stability of ARD/ML mitigation features, contaminated drainage collection and clean water diversion. For the waste rock dumps this should include consideration of dump hydrology, the competency of the waste rock and the impact of in-dump covers.

Blended Waste Dumps

Information Required in Project Report

Specifications - C.3.48:

As stipulated by the Ministry of Employment and Investment, in correspondence dated August 26, 1997, Manalta is required to:

48. address the blending information requirements itemized in the draft BC Ministry of Employment and Investment's Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

C.4 SURFACE HYDROLOGY AND WATER MANAGEMENT

Surface hydrology data is required in assessing the availability of dilution in the receiving environment, as well as for determining water balances, feasibility of maintaining a permanent water cover in the tailings impoundment, flooding of the pits at closure, sizing of run-off and diversion structures, collection and treatment, and assessing impacts on fisheries habitat due to modification of stream flows.

Information Required in Project Report

Specifications - C.4.1 to C.4.5:

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 2-3, Manalta is required to:

1. provide estimates of monthly and annual runoff for water supply design, water management, and assessing collection and treatment requirements. For water balance and effluent concentration assessment ten-year low flow estimates are required. Estimates can be made for on-site data, adjusted for elevation (a unit runoff-basin elevation curve should be established) and pro-rated to long term from neighbouring hydrometric data;

2. provide seven-day low flow estimates for mean annual conditions and two-ten-year recurrence interval to meet water quality objectives (annual low flow in this region generally occurs in the winter period). Specific problem site low flow measurements (MCL1, MCL2 AND MCL3) should be made for these estimates (by comparison with concurrent regional hydrometric data (08EE008) and frequency analyses). This information is required to understand dilution capabilities in a worst case low flow situation;

3. provide instantaneous peak flow estimates for 200-year recurrence interval for designs of diversion/interception ditches and spillways. During mining, if a spillway is not provided, the tailings pond is required to contain a 200-year 24 hour precipitation event on the catchment area. Annual peak flows in this region occur in the spring and early summer due to snowmelt and rain-on-snow events and in the fall due to heavy rainfall events. Small drainages (<25 sq. km.) experience rainfall extreme peak flows and would required estimates based on rainfall intensity-duration-frequency data. Large basins (>25sq. km.) experience snowmelt extreme peak flows and require estimates based on regional peak flow data. Preliminary regional design curves are available from the Inventory Section (Skeena - Nass Strategic Panning Unit Hydrology) study done for the former Planning and Assessment Branch in 1983) but require updating. Reference should also be made to the Section's Manual of Operational Hydrology in British Columbia, 1991;

4. locate on 1:5000 maps, all collector and diversion ditches and x-sections of the ditches; and

5. provide a detailed water balance for the wash plant, pits, tailings impoundment(s) and any other associated infrastructure. This assessment is to consider the changing mine development and its impacts on the water balance; (e.g.; pre-wash plant, during mine-wash plant operation and post-closure).

C.5 GROUND WATER

The Project committee requires a comprehensive ground water assessment to determine if mine related activities will impact ground water flows and quantity, and in turn impact surface stream flows, surface water quality and water production and quality of proximal wells. Ground water data must be available to assess the extent and likelihood that pits can be flooded at abandonment, and that collection systems can intersect and recover contaminated ground water as a mitigation for ARD. The majority of ground water information requests have been integrated in the ARD and water quality sections. Information and assessments should be consistent with RIC *Criteria and Guidelines for Groundwater Mapping and Assessment in British Columbia, October 1993.*

Information Required in Project Report

Specifications - C.5.1 to C.5.4

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, page 8, and the Ministry of Employment and Investment, in correspondence dated May 26, 1997, pages 3-6, Manalta is required to:

1. submit a comprehensive baseline groundwater assessment of the project area. Describe and provide data for pre-mine surface and groundwater quality. Include relevant interpretations. Sufficient detail should be provided to form the basis for comparison of post- and pre-mine water quality (i.e. evaluation of reclamation success as it relates to water quality);

2. assess potential impacts of mining and related activities on groundwater flow and quality. This would include assessing local wells and their hydraulic connections with the minesite;

3. determine probable extent of pit flooding and estimate the time required to flood; and

4. ensure that the ground water supply monitoring program discussed in the Application, also contains a quality assurance/quality control component which ensures confidence in all measured values.

C.6 WATER QUALITY

Water quality is broadly defined in terms of measurable attributes of water, sediment and aquatic life that can be used to describe ecosystem health and usability of water by people for a variety of purposes, including livestock watering, potable water, recreation, crop irrigation and industrial applications.

The goal of baseline inventories is to characterize resources at risk in the receiving environment. From this data, together with the proposed volumes and quality of contaminant discharges, impacts can then be assessed. Receiving environment characterization includes hydrology, water and sediment quality and aquatic life at proposed discharge locations, as well as airshed circulation patterns which may distribute airborne dust and associated contaminants. This characterization must be done at a level of rigor that provides an understanding of the range and value of resources at risk. This information will determine what treatment of discharges may be required to protect resources at risk and what tools may be appropriate for ongoing environmental effects monitoring. In general, the rigor of the inventory and assessment required will be consistent with the perceived risk to the environment.

The water quality and sediment baseline monitoring and assessment programs must include dissolved and total Fe, Mn, Al, Cr, Zn, Cu, Ni, Ag, As, Cd, Pb, Se, Sr, Hg and other elements which may be found in groundwater, waste rock, soil and coal, as well as nutrients (including NH3, NO2, NO3 and total P) and other contaminants derived from blasting materials and chemicals used in coal processing. Coal and other earth material escaping the project property as airborne or waterborne particulate is also considered as a parameter of concern, as are products of acid formation such as sulphate. Low pH is, in itself considered a parameter of concern as it can cause mobilization of metals in the receiving environment, and pH shock to aquatic life. Substances which may moderate or otherwise influence toxicity of contaminants must also be treated as parameters of concern. These may include TOC, TDS, or other measures of metal complexing capacity, hardness, temperature, Cl- and measures of buffering capacity such as total Ca and Mg. The proponent is referred to the ministry of Environment, Lands and Parks *Approved and Working Criteria for Water Quality, 1994.*

Biological monitoring of discharge courses must be done at a level of rigor that will provide for measurement of meaningful changes to populations as a result of the project This should include fish populations and their health (muscle metal levels for example), invertebrates and periphyton. An excellent reference for benthic biological data collection, analysis and interpretation for impact prediction is*: Guidelines for Monitoring Benthos in Freshwater Environments, Environment Canada, January 1993*.

In making impact predictions, consideration should be given to:

- characterization of types and locations of aquatic and terrestrial life which may be at risk downstream of proposed discharges;
- characterization of the hydrologic regime of the site, including runoff and controlled discharge volumes from all sources (pits, tailings pond, stockpiles etc.);
- characterization of groundwater which may comprise a significant portion of the dilution available and/or contaminant loadings from discharges such as pit water;
- characterizing of discharge quality and quantity including tailings pond supernatant and seepages, pit water discharge and site drainage in terms of volumes and chemistry as best as possible through bench scale and/or site testing. Predictions of discharge quality and quantity should also include possible upset conditions such as tailings supernatant spills and water treatment plant failures or spills, and be presented as worst case discharge scenarios along with a description of the likelihood of such event(s), associated potential impacts and what contingencies might be employed to reduce or eliminate impacts. Any potentially acid producing scenarios which may occur in spite of mine planning and contingencies employed must be assessed in terms of impacts on aquatic life on a worst case basis;
- potential impact of altered flows and water quality;
- contaminant loadings from airborne sources along with waterborne sources must be incorporated into these predictions. Sources of airborne contaminants may include tailings pond dams, coal piles and loadout, overburden/soil stockpiles, waste rock disposal areas, roads and pits. If a discharge is to contain more than one contaminant, then potential additive effects of the mix of contaminant must be predicted; and
- conducting a mass balance modeling exercise and sensitivity analysis to predict aquatic impacts.

Information Required in Project Report

Water Quality

Specifications - C.6.1 to C.6.15:

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 8-10, Manalta is required to:

1. provide baseline monitoring data for all receiving aquatic environments consistent with an approved ministry protocol;

2. identify potential toxic effects of waterborne contaminants on aquatic ecosystems, wildlife, livestock and human health caused by mining, processing, stockpiling and shipping of coal. This should include assessments of impacts on all receiving aquatic environments by all discharges and run-off from pits, waste dumps, tailings impoundment, coal processing facilities, haul roads and loadouts;

3. based on kinetic studies and surface and ground water hydrology, assess the impact of ARD to the receiving environment under a worst case scenario;

4. identify potential eutrophying effects on aquatic ecosystems of excess nutrients, originating from blasting residues;

5. develop proposed watershed specific provisional Water Quality Objectives (WQOs) for those parameters of concern that may exceed WQCs in ambient waters;

6. determine potential range of toxic effects on aquatic life from site discharges after closure;

7. identify potential sediment accumulation sites through reconnaissance and by using stream reach mapping;

8. determine sediment chemistry and pore water chemistry in sediments(or other indices of metals availability);

9. assess potential receiving environment sensitivities to sediment metals accumulation;

10. assess potential sedimentation impacts to aquatic habitats originating from site runoff, including roads, creek crossings, diversion ditches, pits, stockpiles of coal, overburden and waste rock, areas stripped of vegetation preparatory for construction of mine infrastructure and open pit mining;

11. discuss mitigation measures to avoid or reduce to an acceptable level all potential impacts on aquatic resources and water quality of both surface and ground water;

12. propose discharge concentrations and volume limits for contaminant discharges from the site during development, operational and post closure periods;

13. propose an impact monitoring program spanning the life of the project, including the post closure period. This should include discussion of how existing baseline data and proposed new data can be interpreted in analysis of changes to aquatic ecosystems over time as a result of mining related activities and discharges;

14. provide a runoff containment and collection system for the mine infrastructure which will control run-off during both construction and production periods. Sediment control during construction is to be emphasized; and

15. to ensure that specifications *C.6.1 to C.6.14* have appropriate impact assessment standards, all water, sediment and biological monitoring sites and frequencies, analytical tests, chemical analyses, detection limits and interpretations and impact assessment rationale and methodology should be the subject of a written protocol. It should include elements to address quality assurance/quality control for filed and laboratory work and the predictive power of data sets. This protocol should be proposed by Manalta and agreed to by regulators including MELP after a joint inspection of the site as soon as possible.

General Waste Management and Spill Control

Information Required in Project Report

Specifications - C.6.16 to C.6.21

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 2-3, Manalta is required to:

16. provide a conceptual level of information for design for the tailings pipeline. Include spill contingencies, warning equipment, etc. (refer to MELP's *Fuel Handling Guidelines* and *Guidelines for Industry Emergency Response Contingency Plans*);

17. characterize all waste discharges from the various processes and workings: air, effluent, refuse and special wastes including discharge parameters (contaminants, volumes, rates, etc.). This characterization is to include discharges during the construction, operational and closure phases;

18. provide a conceptual waste management plan which addresses the disposal options for all of the potential wastes generated on site, (e.g. recycling, alternative uses, backhauling etc.);

19. discuss the operational plans for the storage, containment and spill response for all of the various reagents, fuels, road and dust amendments, and other potentially harmful commodities which will be transported to and from the site

and utilized at the site;

21. provide details for run-off, dust, spill and any other possible discharge control and collection system for the run-of-mine coal stockpiles, coal preparation plant, clean coal stockpiles, laboratory, rail load-out facility, road amendment storage areas, and all coal handling and transportation systems; and

22. if resource areas other than Pit 3, Pit 3 satellite, Pit 7, Pit 8 and Tenas Pit are to be included as part of the project, Manalta must apply the information requirements in this document to those resource areas and assess the impacts the additional reserves will have on the current proposal, (e.g., ARD/ML testwork, tailings impoundment capacity, mine life, etc.). Refer to Specifications C.3.6 to **C.3.17** for kinetic testwork requirements.

C.7 FISH AND FISH HABITAT

As noted in the application, several salmon species, steelhead and bull trout, a blue listed species, utilize the area for spawning, rearing and overwintering.

Manalta's proposal indicates that there will be no direct losses or alienation of fish habitat due to project development. There is however, the potential to impact fish and fish habitat through changes to water quality, sedimentation of spawning gravels, and flow reductions due to diversion of run-off and loss of groundwater recharge, as well as loss of water for wash plant make-up.

The Ministry of Environment, Lands and Parks' review of the project will be consistent with its policies on conservation of indigenous fish populations (November 1993), *and "A Strategic Plan for the Conservation and Management of Char in British Columbia, September 1994*. In addition Manalta should refer to the Forest Practices Code *Mapping and Assessing Terrain Stability Guidebook, April 1995; Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Process Guidebook, June 1995* and *Soil Conservation Guide Book, April 1995)*.

Information Required in Project Report

Specifications - C.7.1 to C.7.5

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 2-3, Manalta is required to:

1. describe specific fish habitat and the species use of the water courses that are likely to be impacted by sedimentation, chemical alterations of water quality any instream structures or flow reduction;

2. propose a site specific habitat monitoring program, approved by MELP to be initiated prior to construction and site disturbance;

3. propose site specific mitigation and/or compensation plans to off-set any losses;

4. propose mitigation plans to minimize the impacts on the blue listed species such as Bull trout; and

5. describe all proposed stream crossings, including: type of crossing and location proposed.

C.8 WILDLIFE, WILDLIFE HABITAT AND VEGETATION COMMUNITIES

The application notes that previous studies by Taesco Consultant's Ltd. (1985) and Hatler (1990) identified the major potential impacts to wildlife and wildlife habitat in the proposed development areas south and north of the Telkwa River, respectively. Moose, mule deer, black bear, grizzly bear and caribou are the main species potentially effected. The latter two have been blue listed by the province indicating population vulnerability.

Impacts could potentially include direct loss and alienation of habitat, and indirect effects such as vehicle collisions and increased human/animal interactions due to increased access. The major direct impact will be the loss of 400 to 500 ha. of moose winter habitat much of which is associated with pits 7 and 8.

Mule deer are found throughout the study area, using early succession stages of deciduous and open habitat types and mixed conifer-deciduous habitat types mainly for thermal cover in the winter. Direct impacts (habitat loss) are not likely to be significant and should be compensated for by habitat enhancement and availability of early successional stages following on-going forest harvesting.

The application also notes the existence of a small caribou population in the nearby Telkwa Mountains but had found no evidence of regular use of the study area. Recent work by MELP which has been developing a recovery program to maintain this herd has indicated that caribou habitat overlaps with the upper portion of the proposed Tenas pit. Any proposed mitigation or compensation must be consistent with the requirements of the ministry's recovery program as well as the Bulkley District LRMP.

Black bears are more common than Grizzly bear, in the study area, frequenting south facing slopes in spring and mesic and wetland sites in the summer. Grizzly bears use spring forage sites usually on lower elevation slopes and are attracted to fish bearing streams during salmon spawning. Potential impacts to bears will be mostly indirect, brought about by increased human access to the area and resulting increase in human-bear interactions. All proposed mitigation should be consistent with the goals of *British Columbia Grizzly Bear Conservation Strategy, June 1995*.

While not noted in the application, ministry staff have recently observed pikas in the proposed Tenas pit area. This is a significant extension of their recorded range and may represent a unique population. Additional information required to assess potential impacts and possible mitigation is addressed in the report specifications.

The application provides information on furbearers and birds, rare and endangered species and vegetation communities associated with the study area. The ministry would like to also point out that riparian, wetland and pond habitats are limited in the study area. Recent work by Sybille Haeussler, a consultant working on a project by Forest Renewal British Columbia (FRBC) has identified a number of rare and endangered plants and plant communities within the Telkwa and Bulkley watersheds. Of particular note, are the stream backchannels and ponded water complexes associated with cottonwood floodplain and riparian sites. These sites, if rich in insects, feeding spaces and hollow cottonwood trees for maternity roosts may be valuable habitats for bats. Manalta has met with ministry fish and wildlife staff on a number occasions and will present and augment this information in the form of terrestrial ecosystem mapping (TEM). This data is required to determine location and degree of impact to habitats for identified species, as well as rare and endangered vegetation communities and as a benchmark for monitoring the success of any habitat reclamation measures.

The TEM will be according to Resource Inventory Conservation (RIC) standards as described in *Standards for Terrestrial Ecosystem Mapping in British Columbia, 1995*, and updates. Data is to be submitted in specified digital and hard copy formats compatible with MELP's Geographic Information Systems (GIS). This is required by MELP to assist in the analysis of data.

If some key wildlife habitat component(s) where animals congregate for a period of time (moose wintering range for example) are found in the vicinity of the project site, it will be important to document current ambient concentrations of metals in wetland and upland vegetation used for food in these locations. By doing this, Manalta may establish prior conditions against which they can assess impacts of metal contaminants at a later date. Sampling locations chosen to represent the range of use should include a control site and a gradient of potential exposure to metals leading away from the area of disturbance or source of enrichment. Metals which may be present in the pit run and waste rock from the property should be included in the analyses, and interpretations of differences (if any) between control and potentially influenced sites made. This monitoring regime should be repeated during the life of the mine, as part of on-going impact assessment efforts. This program should meet the needs of both MELP and MEI.

Information Required in Project Report

Specifications - C.8.1 to C.8.7

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, pages 13-14, Manalta is required to:

1. document population size, local range and habitat use of pikas if within the mine area and assess potential impacts and propose mitigation;

2. provide additional information regarding mitigation of indirect impacts including vehicle-ungulate collisions along the haul roads;

3. provide additional information on habitat use and populations of caribou associated with Tenas pit;

4. develop a grizzly bear mitigation proposal that is consistent with the goals of *British Columbia Grizzly Bear Conservation Strategy, June 1995*;

5. develop a conceptual plan to compensate and restore habitat for the 400 to 500 ha. of moose habitat to be lost or alienated by mining activity;

6. identify red and blue listed plant and animal species, communities and associations; and

7. conduct Terrestrial Ecosystem Mapping (TEM) at a scale of 1:20,000 and at a survey intensity level 4 for mapsheet 93L.065 and the northern half of 93L.055.

C.9 FOREST RESOURCES

The Ministry of Forests' request for agency report specifications and public issues is governed by the *Ministry of Forest Act* section 4. Under that section, the purpose of the ministry is, in part, to encourage maximum productivity of the forest and range resources of the province, and plan and manage the use of these resources. The following specifications ensure that impacts to range and timber resources are minimized, and that access for harvesting, silviculture, protection, grazing and recreation activities are not denied.

Range

Information Required in Project Report

Specifications – C.9.1 to C.9.4:

As stipulated by the Ministry of Forests, in correspondence dated May 2, 1997, page 1, Manalta is required to:

1. consult with the Ministry of Forests regarding the grazing lease under that ministry to the tenure holder;

2. provide a noxious weed management plan to mitigate the spread of noxious weeds on all right of ways and disturbed areas;

3. comply with sections 21 to 26 of the *Range Act* regarding the compensation and notification to tenure holders; and

4. ensure that cattleguard and fencing control measures for livestock are conducted where appropriate.

Forest and Recreation Access

Information Required in Project Report

Specifications - C.9.5 to C.9.7:

As stipulated by the Ministry of Forests, in correspondence dated May 2, 1997, page 2, Manalta is required to:

5. consult with the grazing license holder, regarding resolution of any access constraints to his operation. Depending on the final access haul road location, the road may require fencing and if the grazing licence tenure is dissected, access to all sections would be required;

6. consider using existing and proposed hydro and pipeline right of ways to minimize impacts to Crown Lands; and

7. provide for public, industrial, and/or Ministry of Forests access to the east side of Goathorn Creek. Public, industrial and crown access should be provided for the area south of the main haul road between the plant site and the railway.

Timber

Information Required in Project Report

Specifications - C.9.8:

As stipulated by the Ministry of Forests, in correspondence dated May 2, 1997, pages 2-3, Manalta is required to:

8. submit a proposal to return all Crown land to the provincial forest base at current forest productivity at completion of project operations. Reclamation should be done to ensure the soil productivity is maintained at it's present site index of 20-23 m base age 50. Reclamation should also promote coniferous, commercial forest crops in accordance with the Landscaped Unit objectives.

C.10AGRICULTURAL RESOURCES

Information Required in Project Report

Specifications - C.10.1 to C.10.3:

As requested by the Regional District of Bulkley-Netchako and the Agricultural Land Commission, in correspondence dated July 2, 1997 and July 25, 1997 respectively, Manalta is required to:

1. provide further information regarding the impact of the loadout facility upon neighbouring agricultural use;

2. provide a detailed assessment of existing land use, soils, vegetation and topography; and

3. provide a comprehensive reclamation plan detailing the easures to be undertaken to reclaim the Agricultural Land Reserve lands affected by the project to equivalent or better agricultural condition. This plan should be prepared by a Land Reclamation Specialist who is a member in good standing with the BC Institute of Agrologists.

C.11 ENVIRONMENTAL SUPERVISION MONITORING

Information Required in Project Report

Specifications - C.11.1 and C.11.2:

As stipulated by the Ministry of Environment, Lands and Parks, in correspondence dated May 30, 1997, Manalta is required to:

1. outline a conceptual environmental supervision program for construction and operation and operation stages, including haul road construction and overburden stripping; and

2. describe the proposed environmental supervision and monitoring program for construction of all stream crossings.

D. SOCIO-ECONOMIC AND COMMUNITY ISSUES

Preamble

Section D outlines the socio-economic information and analysis that should be included in Manalta's project report. Where possible, this information and analysis should be supported by documentation of information sources, assumptions, rationale and methodology used. These reporting requirements are based primarily on a review of Section 5 (*Socio-Economic Conditions)* and Section 9 (*Potential Impacts and Mitigation Measures*) in Volume 1 of Manalta's application. The requirements also meet with Manalta's stated intent of preparing a socio-economic impact analysis of the project (page 175, Volume 1).

Economic effects generally include impacts on employment and labour markets, income, infrastructure capacity, government finances, and on economic and regional development. Social effects generally include impacts on population growth, social characteristics, housing and accommodation, social services, land use, traffic, congestion, transportation, community infrastructure requirements, community stability and cohesion, and "quality of life" (or lifestyles).

Manalta has touched upon some of these issues in its application, although evaluations are presented in fairly general terms. The application also reflects inventories of socio-economic conditions rather than evaluation and assessment of impacts. For the project report, some supporting analysis, statistics, rationale or examples are needed, and assumptions and information sources should be clearly documented. While the project committee requires a socio-economic impact assessment, and is not expecting an academic research focus to this evaluation, assertions nevertheless should be adequately supported and documented. Manalta is referred to examples of socio-economic impact analyses submitted for EA reviews of other projects in BC, and is invited to meet with appropriate project committee members to discuss and clarify their expectations.

Some of the socio-economic impacts associated with the project appear likely to be positive (such as job creation and tax revenues), and, in part, the assessments which are requested below are intended to lead to a more informed evaluation of the likelihood that the benefits which are realized will outweigh social and community incremental costs. The project committee will want to be in a position to document the potential socio-economic benefits of the project, as well as potential costs, as part of its final referral to Ministers at the end of the project report review stage.

It should be noted that there are no pre-conceived public policy expectations that the benefits yielded by a particular development should be of a certain type or magnitude. At the same time, proponents are expected to provide the analysis necessary to support any claims that their projects will provide regional or local economic benefits of a particular type and size.

The information and analysis requested will also serve to identify the potential negative socio-economic impacts of the project (such as dust, noise and traffic impacts), and the opportunities and plans to mitigate or avoid negative effects. In its socio-economic analysis, Manalta should not feel limited to addressing only the issues identified in the specifications. Manalta is welcome to present its views, analysis or specific proposed measures on any other issues raised by community interests.

In the application Manalta has used socio-economic statistical data based on the 1991 Census. The project report should use information found in the 1996 Census.

D.1 SOCIO-ECONOMIC PROFILE OF AFFECTED COMMUNITIES AND REGION

While, in its application, Manalta has presented some basic socio-economic information for the local area and region within which the project is proposed, further information should be provided in the project report. This information will provide useful background in evaluating the significance and implications of several expectations which Manalta noted in its application (e.g. that the development would provide good employment opportunities for the immediate area).

Information Required in Project Report

Specifications - D.1.1 and D.1.2:

1. The following information is requested in the project report to help evaluate these and others issues:

- **a clear definition (or map representation) of the geographic area considered in assessing local/community impacts (i.e. Telkwa and other communities in the vicinity of the project) and regional impacts (i.e. the broader area which is deemed likely to be affected by the project);**
- **a brief and very general demographic profile of the region, including age groups, gender, family status and social assistance levels (if available);**
- **identification of any community characteristics which could be changed substantially as a result of the project;**
- **identification of community characteristics which may shed light on the extent of the community's resilience and capacity to accommodate any stresses associated with the project; and**
- **a profile of the local labour force and labour market conditions, including a description of the existing labour pool and unemployment rates, particularly as they relate to the types of jobs which will be created by the project, both during construction and at the operations stage.**

2. In the project report, Manalta must assess the socio-economic implications of the project for First Nations people. As part of this assessment, a local and regional socio-economic profile of First Nations communities must be prepared for the project report.

D.2 EMPLOYMENT AND INCOME EFFECTS

General Context

The potential economic and employment effects of the project are cited by both project supporters and critics alike as some of the key considerations in the EA review of the project.

As noted more generally in the *Preamble* to section D, there are no pre-conceived public policy expectations that the benefits yielded by a particular development should be of a certain type or magnitude (for example, that prospective employers should be striving to provide jobs of any particular skill type or wage level). In principle, the province encourages all forms of employment creation which comply with basic employment standards. Nonetheless, as part of the EA process, proponents are expected to justify projections which they make with respect to job creation and income generation.

General Employment Information

In its application, Manalta presents some basic preliminary estimates on employment from the mine operations. There are no assessments of income generated from the predicted employment. Updated and expanded information should be presented in the project report.

For the project report, Manalta should provide estimates of direct, indirect and induced employment creation which is attributable to the project. The spin-off (indirect/induced) effects could be assessed by describing and providing estimates of project linkages with the local and regional economy, or by applying multipliers to direct effects. Using multipliers is a common approach, but views may vary widely with respect to the selection of appropriate multipliers. If Manalta opts for this approach, it is advised to contact MEI to determine which appropriate multipliers to use.

Information Required in Project Report

Specifications - D.2.1 to D.2.3:

General Employment Information

1. To assess the nature of the socio-economic impacts of the project, the following information must be presented in the project report, with a more complete explanation of assumptions or rationale, methodology and sources of information:

- **an estimate of the number of direct jobs, total direct employment income and/or wage levels in project construction and in operations, by clearly defined phases, by type of job and by differentiating as much as possible between full-time, part-time and seasonal positions;**
- **corresponding estimates of indirect/induced employment and income at the local, regional and provincial levels, for both the construction and operation phases, to support any projections by the proponent with respect to the spin-off effects of the project; and**
- **where significant spin-off effects are predicted by the proponent, the project report must document any multipliers which it has assumed for the analysis, with rationale.**

Seasonal Employment Issues

2. In its project report, Manalta must document the extent to which the year-round nature of the project could reduce the incidence of both seasonal employment and immigration of temporary workers.

3. In the project report, Manalta should discuss any programs which it is considering which will help to mitigate any adverse effects of seasonal employment associated with the project.

D.3 ENHANCING LOCAL SOCIO-ECONOMIC BENEFITS

Major projects may create employment opportunities for local residents and employment equity groups, and provide new opportunities to local residents by providing skills upgrading and training. Such features of a project enhance local socio-economic benefits. The application notes that the proposed project will increase employment opportunities in the region, and outlines the intention of training and employment programs for local recruitment.

It should be noted that there are no public policy expectations with respect to hiring practices, training or conditions of employment in the private sector. For example, government does not stipulate hiring quotas which private developers are required to meet. Nonetheless, Manalta may wish to indicate its intentions with respect to these matters, and its projections for local vs. out-of-area hiring, hiring by gender, employment of First Nations people at the mine, etc., in the project report, so that the project committee can take them into account in determining overall project benefits and costs at the conclusion of the project report review stage.

Information Required in Project Report

Specifications - D.3.1:

1. To assess the potential scope of such benefits, the project report must include:

- **estimates of the proportion and types of direct employment which Manalta expects to be filled by local residents, by regional residents and by in-migration; and**
- **information on any assumptions on which these estimates are based, such as:**
- **any available statistics on the availability and skills of labour,**
- **an overview of experience of similar mining projects,**
- **any proposed strategies to facilitate local hire, and/or**
- **any proposed skills upgrading or training opportunities for local/regional residents.**

Voluntary Information Requests

At its discretion, Manalta is also invited to outline in its project report any special company programming (e.g. skills training opportunities) intended to foster the recruitment of local people, women and First Nations people into the work force, and to provide the projected gender breakdown of the work force, based on any such program. If, through discussions between Manalta and First Nations, any form of understanding is entered into with respect to training and employment of First Nations people at the mine, this could also be documented.

D.4 ECONOMIC DEVELOPMENT BENEFITS

Projects of this type may have important impacts on the economic conditions of surrounding communities, both positive and negative. This section focuses on the positive benefits.

The application provides some general information on how the project will have positive economic development impacts, for example:

- by fostering economic diversification, through creating new job opportunities; and
- through increased indirect/induced job-spin-offs.

In the project report, Manalta is invited to provide or identify any information in addition to job creation and income generation which will assist the project committee with its evaluation of project benefits.

Information Required in the Project report

Specifications - D.4.1:

1. Manalta must outline, by reference to other similar mining projects in rural areas, how other economic benefits have been achieved. Issues to be addressed are:

- **creation of new local business opportunities;**
- **impacts related to local purchasing; and**
- **potential for site tours.**

D.5 RECREATION AND TOURISM IMPACTS

The project site and surrounding area currently support a range of recreational opportunities and activities. Activities which currently take place in the area include hiking, mountaineering, hunting and fishing, snowmobiling, kayaking and back-country skiing.

The project site and adjacent areas afford recreational settings which range from primitive or wilderness landscapes in alpine and sub-alpine areas, to roaded settings where previous logging and mining are evident. Section D.5 of the project report specifications addresses the following topics:

- implications of the project for on-site and adjacent outdoor recreational activities - see section D.5(A);
- the air quality impacts of project development - see section D.5(B);
- the visual impacts of project development - see section D.5(C);
- the noise impacts of project development - see section D.5(D);
- implications of project development for commercial tourism - see section D.5(E); and
- implications of project development for enjoyment of fish and wildlife resources - see section D.5(F).

D.5(A)ON-SITE AND ADJACENT OUTDOOR RECREATIONAL USE

Preamble

This section addresses general changes in the outdoor recreation settings and use at, and adjacent to, the project site. The project site and adjacent areas presently support a wide range of backcountry recreational use. For example, the Telkwa River valley and many of the adjoining creeks offers considerable hiking and hunting/fishing opportunities. Back-country skiing is also popular and some trails and snowmobile tracks will be affected by the mine development.

Tourism in the project area also generates revenues for local operators, and the impact on such activities on revenue generation must also be reflected in the project report.

Outdoor Recreation Features/Facilities Inventory

The Recreation Opportunity System (ROS) is the preferred methodology for the inventory of outdoor recreation resources for Manalta’s project report, and is used by resource managers to establish targets for recreation. The classification system characterises the type of recreation experience which either a commercial or non-commercial recreationist would have in the following terms:

- primitive;
- semi-primitive non-motorised;
- semi-primitive motorised;
- natural; and
- roaded resource land.

These ratings are based on various criteria - remoteness, size, evidence of human presence, social setting, setting characterisation and experience characterisation.

Information Required in Project Report

Specifications - D.5(A).1 to D.5(A).7:

Inventory Methodology

1. In complying with the subsequent specifications in section D.5, Manalta must ensure that all reporting on recreational activity and settings is based on recreation inventory work which is consistent with Ministry of Forests Resource Inventory Committee (RIC) standards, and utilises the Recreation Opportunities Spectrum (ROS).

Changes in On-site Recreational Settings and Opportunities

In the project report, Manalta must:

2. describe the established outdoor recreational use of the project area, noting activities such as snowmobiling, hiking, horseback riding, fishing etc. (i.e. level of activity, and where it occurs); and

3. where current outdoor recreation settings and/or activities are displaced or altered, assess the magnitude of these changes (also on tourism revenue generation), noting alternative opportunities and, where appropriate, means to mitigate changes.

Change in Recreational Uses of Adjacent Areas

In the project report Manalta must:

4. describe the current outdoor recreational settings and use of areas surrounding the project site;

5. characterise current outdoor recreation activities in terms of their rates of use, key locations, and sensitivity to conflicting uses. An outline of tourism revenue generation should also be included in the project report;

6. present an assessment of the potential effects of the proposed project on current outdoor recreation settings, opportunities and use in surrounding areas. Specifically, this assessment must address the following two themes:

- changes in access to adjacent areas resulting from road construction, new facilities, increased traffic,
- changes in visitation and visitor profiles, and in the activities and settings which the project work force may seek on adjacent land; and

7. where changes in use and negative effects are identified, outline remedial strategies. Any areas to which access may have to be restricted or prevented must be noted.

D.5(B)AIR QUALITY IMPACT OF DEVELOPMENT

The project will impact air quality within the proposed project boundary. Manalta has addressed these issues in Section 9 of the application (Air Quality, page 159-165) and suggested mitigation measures.

Dust is generated by blasting, pit operations, stockpiling, traffic on the mine haul and access roads and may have a major impact during the dry summer months when recreational and tourism activities are at their peak, if not adequately managed. Manalta will outline its dust control management plan in the Project Report.

Air Quality is also addressed under the technical section of the report specifications (see Section C.2). Section D.5 (B) only addresses air quality as it may impact on recreation and tourism.

Information Required in Project Report

Specifications - D.5(B)1 and D.5(B).2:

In the project report: Manalta must:

1. analyse the dust transportation and settlement within the defined recreational/tourism areas as discussed under Section D.5(A). Particular emphasis should be put on possible affects at camping and resting sites and at popular ski trails; and

2. outline a mitigation/management plan to minimize impacts during peak recreational seasons.

D.5(C)VISUAL IMPACTS OF DEVELOPMENT

Project Setting

It is recognised that previous resource extraction operations in the Telkwa River valley have resulted in visual impacts, some of which will continue to be apparent for a number of years. However, at higher elevations within the valley, and in surrounding drainage, landscapes are largely undisturbed, and of high visual quality. At this point, it is not known to what extent the mine-related facilities and structures will be visible beyond the confines of the mine/pit areas.

Sources of Potential Visual Impact

Visual impacts would be expected to include three basic types of landscape alterations:

- vegetation clearing and grading work in preparation for construction of mine facilities and roads;
- construction of dominant mine structures, power lines and open-pit excavations and access roads; and
- operation of facilities.

Visual Management Context

Visual management policy is evolving in BC at present. It appears that priority is being placed on so-called “front country” areas, with visual management to be achieved through designation of “scenic areas” under the *Forest Practices Code*. Front country areas primarily consist of the region’s main public highways and valley bottoms. For such areas, the intent would be to apply visual management requirements based on an area’s sensitivity and significance, with detailed landscape analysis conducted within the framework of Visual Quality Objectives (VQOs) and formal Visual Impact Assessment.

Information Required in Project Report

Specifications - D.5(C).1 to D.5(C).3:

For the project report Manalta must:

1. perform a visual impact analysis of the proposed mine development, including the access road and any transmission line. The analysis must conclude with an assessment of the potential visual impacts of the project at various stages of development, and the opportunities to minimise such impacts through appropriate landscape management planning;

2. provide a description of the type and size of all structures which occur at an altitude which would make them visible from points outside the development area; and

3. prepare computer simulations superimposing the features of the mine project on the existing landscapes from any impacted view angles.

D.5(D)NOISE IMPACTS OF DEVELOPMENT

The project will generate noise in the local environment. Noise impacts will be created from blasting, heavy hauler traffic to the preparation plant, traffic to the load-out rail facility and from the preparation plant operation. Manalta has recognized this impact in the application (Section 9,

page 163-164), and has proposed some general mitigation measures.

This section (5.D(D)) only deals with noise impacts on recreation and tourism.

The level of natural ambient noise in a wilderness area can be highly variable, depending on weather conditions (barometric pressure and wind, precipitation, temperature inversion, etc.), vegetation type and density, proximity to running water and even wildlife activities. The intent of the noise impact assessment for the project report is to identify the zone of perceptible noise around the project site, and any reasonable mitigation measures to minimise this zone as it may impact on recreation and tourism.

Information Required in Project Report

Specifications - D.5(D)1 to D.5(D)2:

1. A preliminary noise assessment will be sufficient. While some spot field measurements of background noise levels must be collected, a detailed and elaborate field investigation is not required.

2. Manalta should also attempt to assess the noise impact on the environment.

D.5(E)COMMERCIAL TOURISM

The commercial tourism sector comprises businesses which provide such “commodities” as access, touring, meals and accommodation. In both the local and regional context, the project can be expected to affect the operations of those businesses who rely on the Telkwa community area as well as the back-country.

Information Required for Project Report

Specifications - D.5(E)1 and D.5(E).2:

In the project report Manalta must:

1. work with tourism operators, including guide outfitters, to document existing tourism businesses in the project and surrounding area. Issues to be addressed include use areas, scheduling, seasonality and impacts on resources; and

2. describe the impacts of the project on tourism operations during the construction, operation and abandonment phases and, where appropriate, outline strategies to avoid or mitigate these impacts. Specifically:

- **For any commercial backcountry operations in the vicinity of the project identify potential for:**

- changes to scenic quality,

- changes to access,

- loss or alteration of wildlife and fish habitat, and

- impacts to water quality.

D.5(F)FISH AND WILDLIFE RECREATION

The Telkwa River valley and adjacent areas currently provide fish-related and wildlife-related recreation in the form of fishing, hunting, trapping, wildlife viewing and commercial guiding of non resident hunters.

To date, one of the general management objectives of MELP (BC Environment and Lands) has been to manage fish and wildlife populations for the purpose of providing long-term consumptive and non-consumptive recreational and commercial opportunities. Both protection of wildlife habitat and continued provision of hunting opportunities have been integral to MELP's approach.

The application does not address issues associated with consumptive and non-consumptive use of fish and wildlife resources. Consideration of various issues is needed, including:

- the potential loss of hunting and fishing opportunities (e.g. through possible "no shooting" areas, potential wildlife or fish population reductions associated with the mine development, incremental angling restrictions);
- potential encroachment on the existing guide/outfitter territory and existing traplines in the area;
- potential restriction of general public access to the valley for the purpose of hunting, fishing or non-consumptive uses (e.g. viewing); and
- the specific issue of the implications of the project for any First Nations hunting and trapping in the area.

Information Required in Project Report

Specifications - D.5(F).1 to D.5(F).5:

General Assessment

In its project report Manalta must:

1. present an assessment of anticipated impacts of project development on the current guide-outfitting and trapping tenureholders operating within the impacted areas of the project, and on non-guided hunting and angling activities within that same area;

2. include information on historical and current hunting in the area of the project, including First Nations hunting, and the potential impacts of the project on hunting. This information should be developed in co-operation with MELP and First Nations;

3. assess the effects of any area closures and access restrictions, and of the project itself, on the ability of the public to use and enjoy wildlife in a non-consumptive way in the Telkwa River and adjacent watersheds;

4. assess the impacts, if any, on fishing, and on public and First Nations access to fishing, in Telkwa River; Bulkley River; Hubert Creek and Helps Creek; and its tributary streams; and

5. document proposed measures to avoid, mitigate or otherwise address potential impacts.

D.6 IMPACTS TO NEIGHBOURING RURAL RESIDENTIAL LANDS

The project site and surrounding area currently support a range of rural residential uses and activities.

Specification - D.6.1:

In its project report Manalta must:

1. provide the same information required in specifications D.5(B) 1, D.5(B).2, D.5(C).1 through to D.5(C).3, D.5(D).1 and D.5(D).2 to identify air quality, noise and visual impacts to the rural residential properties which are in close proximity to the proposed mine site, haul road and loadout facilities; and

2. provide an assessment of the effects of the project on neighbouring land and property values.

D.7 ROAD ACCESS ISSUES

The project will affect road access and transportation/traffic issues as follows:

- increased vehicle traffic on Highway #16; through Telkwa village and via the existing (single lane) bridge over Bulkley River; on to Lawson Road and connecting to the new mine access road;
- possible heavy commercial traffic on the Telkwa Forest Service road from the Houston area; and
- new haul truck traffic on the haul road between Pit #7/Pit #8 and the coal preparation plant may result in opening up further areas to traffic/animal conflict, human/animal conflict and increased sediment loading to the Telkwa River.

The application shows the general layout of the mine access road, but contains limited information on resulting impacts on the community.

Manalta will be expected to provide more complete information in the project report to address concerns relating to the traffic capacity of the existing Telkwa road system. Manalta must also assess the traffic impact of more frequent trains, as the rail line crosses Coalmine Road close to the approach of the Bulkley Bridge.

In case of wildfires and emergencies, proper access and escapes to and from the project area should also be considered. It is acknowledged that, due to topographical constraints, it is very unlikely that two entirely separate access roads will be developed to and from the proposed mine. Thus alternative safety strategies must be considered. Fire crews, both from fire departments and from MoF, and using heavy equipment, will require quality road access to ensure rapid control of wildfire events. Mine crews require the means to leave quickly and efficiently, in the event of the need to evacuate the community.

Information Required in Project Report

Specifications - D.7.1 to D.7.8:

As stipulated by the Ministry of Transportation and Highways, in correspondence dated June 12, 1997 and the Village of Telkwa in correspondence dated June 17, 1997, Manalta is required to:

1. estimate vehicle trips (with origins/destinations) of all mine related traffic, for both construction and operational phases. It is important to distinguish between cars or light trucks and heavy industrial vehicles in the estimates. Anticipated impacts (conservatively assessed) of this additional traffic must be documented, with supporting assumptions;

2. estimate type and frequency of industrial services and supplier traffic, including identification of hazardous goods;

3. traffic problems created or amplified by the project, in the vicinity of the Bulkley River bridge and CNR level crossing, should be documented and proposed solutions described;

4. determine the schedule for the coal trains crossing at Coalmine Road in Telkwa and determine the amount of time it will take for the average train to pass that road crossing. The impact on traffic and potential for creating congestion at the Bulkley bridge should be estimated for potential conflicts with other intersections and impacts on peak traffic times;

5. estimate anticipated heavy and wide loads during construction and operation phases. Suitability of the Telkwa FSR and Lawson Road for the planned loads must be confirmed and documented. Seasonal load restrictions may apply on Lawson Road;

6. substantiate the design concept of any works on public road right of way, especially the intersection of the clean coal haul road Lawson Road;

7. estimate the impact on maintenance requirements (dust control, surface upkeep) as a result of the new traffic patterns, including proposed mitigation/solutions; and

Emergency Vehicular Access

8. assess the public safety implications of a potential blockage of the single main access road during an emergency event (e.g. seismic, fire, etc.) for which emergency access is required.

D.8 SPECIFIC INFRASTRUCTURE AND SERVICE REQUIREMENTS

This section provides some background observations on the demand for, and the funding and delivery of, various specific types of

infrastructure and services for which the project may create a demand. These comments are intended to facilitate an appreciation of the public policy context for the provision of infrastructure and service support to development projects, and to assist the proponent with the preparation of information to satisfy the reporting requirements. A common feature of many of the servicing issues raised in this section is uncertainty about the ultimate demand for services, the rate of growth of that demand, and the need for a more detailed appreciation of the demographic implications of the mine development in surrounding communities.

Section D.8 addresses the following topics:

- health services and first aid facilities - section D.8(A);
- solid waste disposal - section D.8(B);
- education and schooling services - section D.8(C);
- social services - section D.8(D);
- day-care - section D.8(E);
- police services - section D.8(F);
- fire-fighting services - section D.8(G); and
- emergency preparedness - section D.8(H).

D.8(A)HEALTH SERVICES AND FIRST AID FACILITIES

A potential influx of an on-site workforce may place increased demands on health programs, ranging from emergency medical care to drug and alcohol abuse, to waste disposal. Each Health Region under MOH is funded by the province through a formula which takes into account both its own population and the services which it renders to patients from other Health Regions. Health service delivery costs are not charged back in any specific way to individual private developments beyond the normal taxation system.

MoH will be in a position to evaluate for itself the significance of the project for the delivery of health services, once Manalta has provided a detailed assessment of the demographic implications of project development for local communities.

Regular ambulance service to the mine is deemed to be a Manalta corporate responsibility. Manalta may chose to base an industrial ambulance at the site at its own cost for its own employees (e.g. through an arrangement with the Workers Compensation Board [WCB]). Manalta is requested to consult with the WCB about the possible need for an industrial ambulance. The proponeet should note that regular ambulance service is a specification under the Mine Code and is part of mine permitting.

Information Required in Project Report

Specifications - D.8(A).1 and D.8(A).2

In the project report Manalta must:

1. provide information which can form a basis for estimating the demands which the mine development may place on existing health services. Primarily, the analysis must consist of:

- **providing demographic impact information,**
- **providing estimates of the total anticipated number of accidents involving injuries, and of those requiring emergency evacuation and/or requiring hospital visits (**Note - For data on accident frequency, documentation of statistics and experience from comparable mine facilities will suffice); and

2. identify what (if any) types of health facilities and services (e.g. first aid facilities) are to be provided at the mine, and on what scale.

D.8(B)SOLID WASTE DISPOSAL

It is assumed that the project's solid waste disposal will not impact those of the local communities and that Manalta will develop an appropriate collection and disposal service at the project site. If a workers camp site is not developed (see Section D.9) and workers are housed in the local communities, an assessment of required local services must be included in the project report.

Information Required in Project Report

Specification - D.8(B).1

1. In the project report, Manalta must provide some analysis of incremental costs of the project's solid waste disposal needs, and must review the allocations of these costs, following discussions with local government.

D.8(C)EDUCATION AND SCHOOLING SERVICES

If the project is approved, the local School Board would need to determine the legitimacy, immediacy and stability of the projected student enrolment demands resulting from an influx of new families associated with the project. This assessment must be based on population forecasts and actual inflows (i.e. the number of students in the kindergarten to grade 12 range). MEST and School District projections are used for capital planning purposes, and are based on census data and population trend analysis conducted by the Ministry of Finance and Corporate Relations.

New schools are built only once the actual demand exists, and not in advance, on the basis of projections. Thus, as a new population were to develop as a result of the mine, it would be monitored, and interim arrangements would be made for the schooling of children until there is a sufficient school-age population base to justify construction of any new school facilities. Normally, MEST would not consider funding new facility construction until the demand has actually materialised at the mine. This approach is intended to minimise the risk entailed in investing scarce capital investment funding on unnecessary educational space.

Information Required in Project Report

Specifications - D.8(C).1 and D.8(C).2:

In the project report, Manalta must:

1. provide an estimate of the number of school-age children who are likely to be resident in Telkwa and other affected communities at different stages of project development; and

2. report on the results of discussions with the local School Board on schooling issues, including any discussions related to costs.

D.8(D)SOCIAL SERVICES

General

In general and prior to being superseded by Ministry of Human Resources and Ministry of Children and Families in September 1996, MSS was responsible for the delivery of social services. Some of its services, specifically child protection, services to youth

and family services, and also income assistance, are a mandatory government obligation, and that MSS service delivery for these types of service were client-driven. MSS also funded community-based counselling services, but on a discretionary basis, as and when funding permitted. It considered that the ability to respond to any increased demand for that type of service was therefore a budgeting issue.

Preliminary indications are that, under the new Ministry structure, the nature of government's social service delivery responsibilities are unchanged. However, MHR is now responsible for income assistance programming, while almost all of MSS' former child-related programming has been transferred to MCF, other than the delivery of day-care subsidy payments, which is being handled by MHR (because it has the local district facilities necessary to handle this responsibility).

If the project proceeds, some degree of impact on social service provision may be expected.

Information Required in Project Report

There are no formal reporting requirements with respect to this issue.

Prior to government restructuring in September 1996, MSS generally recommended that a project proponent develop a close ongoing working association with MSS district staff as the primary means of alerting MSS to any changes which may affect its ability to deliver services, and specifically any incremental demand for its services which emerge as the project proceeds. Through such a working relationship, problem-solving approaches may be jointly developed, and these may also involve other elements of the community. This continues to be the advice of the newly formed MHR and MCF.

D.8(E)DAY-CARE SERVICES

General

On September 23, 1996, the newly-created MCF acquired numerous child-related and family programming responsibilities from various provincial ministries. Prior to that date, Ministry of Women and Equality had had the primary responsibility for childcare in BC (including day-care), Ministry of Social Services had administered the delivery of day-care subsidy payments to qualifying parents/guardians, and MoH had regulated day-care facilities. It is understood that MCF now has responsibility for all childcare programming except for the delivery of day-care subsidy payments (which is handled by Ministry of Human Resources).

Provision of Day-care Facilities in BC

The MWE generally advises that delivery of day-care services is largely a private sector responsibility. Thus, day-care service delivery is market-driven. In this area, as in most settings in BC, it is expected that, on the average, about 80% of the costs of child care services would be provided by parents/guardians. Thus, most of the available funding is targeted to parents (rather than to facility operators), to facilitate parent choice. Depending on type of facility, actual day-care costs, age of the children, parent income and "need", the subsidy program could cover up to 100% of a parent/guardian's day-care costs.

Should Manalta wish to consider providing group child care facilities for the mine, in an off-site facility, the facility must be approved by government regulatory officials.

Information Required in Project Report

There are no formal reporting requirements with respect to this issue.

Voluntary Reporting Requirements

In its project report, Manalta is invited (but is not required) to provide any views which it may hold on day-care issues, on the likely demand for day-care facilities among its workers, and of any plans for locating facilities at communities or camps, housing out-of-area workers at the mine and their families.

D.8(F)POLICE SERVICES

General

While there are general guidelines, the actual ratio of police to population fluctuates considerably around BC for many reasons, not all attributable to crime rates. In determining the need for policing services, the most likely scenario is that the RCMP will adapt to the new project's demands gradually over time, taking account of other local growth factors.

Typically, in a situation such as this, the local detachment of the RCMP would assess the potential impact of a project on policing demands on an ongoing basis, and would negotiate any incremental resource requirements, as and when the need arises, through its policing agreements with the province. Police resource planning is not an exact exercise, and judgement will be needed, taking account of actual experience, available resources and competing demands.

Information Required in Project Report

There are no formal reporting requirements with respect to this issue.

.

Voluntary Reporting Requirements

Manalta is encouraged to engage in discussions with the MAG's Police Services Division and the RCMP on policing issues, including the provision of policing services. At its discretion, Manalta may wish to report on the outcome of these discussions in the project report, noting any advice received on policing issues.

D.8(G)FIRE-FIGHTING SERVICES

Background

Fire protection in the province is overseen by MMAH's Office of the Fire Commissioner (OFC). Pursuant to the *Fire Services Act*, the Commissioner sets standards. Delivery of fire protection services is a local responsibility, and fire fighting services at the mine are considered to be the responsibility of the proponent.

Information Required in Project Report

Specifications - D.8(G).1 and D.8(G).2:

In the project report Manalta must:

1. provide an overview of its proposed fire fighting strategies for the mine and attendant structures, including the rail load-out facilities. The proposed fire-fighting system must include adequate provision for fighting fires at each stage of project construction, as well as after the mine is completed; and

2. clarify the costs of, and respective public and private sector responsibilities for the funding of, fire fighting services at the mine, as envisaged by Manalta. The *Mines Act* **requires that a mine have appropriate emergency response and fire fighting capability. However, the proponent may wish to work out additional arrangements with the local municipality.**

D.8(H)EMERGENCY PREPAREDNESS

The project may be capable of placing significant incremental demands on the existing public safety systems in the region. Manalta is responsible for making adequate arrangements to assure the safety of its workers, clientele and other members of the public who visit the mine, as specified under the Mine Code.

Information Required in Project Report

Specifications - D.8(H).1 to D.8(H).3:

In the project report, and drawing on the information required to address various other public-safety-related issues which are raised in these specifications Manalta must:

1. prepare a risk assessment and identify potential threats and prepare a plan for emergency preparedness to ensure that there will be no burden to the municipalities or the province and which takes explicit account of the following specific circumstances with respect to this mine proposal:

- **the need to be able to respond to accidents and to treat injuries incurred at the mine,**
- **the need to manage and monitor wildfire hazards in the vicinity of the mine and its access road,**
- **the need to rely on a single access road as the only means of ground-level traffic access and egress to the mine, and the risk that this single road could become blocked or overloaded with traffic during a critical time (e.g. when there is a need to transport injured people from the mine or, in the case of a more general hazard, to evacuate a large number of people),**
- **the fact that air (i.e. helicopter) access will not be possible at all times, and, in any case, has only a limited capacity to evacuate people from the area in the event of a hazardous circumstance such as a wildfire or earthquake;**

2. attempt to estimate the demand which the project will make on emergency response services already provided in local communities and in the region in general, and should clarify its view of the respective public and private sector roles and funding responsibilities for the provision of these types of emergency services; and

3. document the outcome of discussions with the regional district, the Provincial Emergency Program, and other relevant safety-oriented agencies with respect to the current availability of appropriate emergency management systems, and the need for additional services to meet the needs of the mine. Where Manalta is not to be responsible for the delivery of a particular service, it must document, where possible, the agreement in principle of another party to provide the service.

D.9 INFRASTRUCTURE, GOVERNMENT SERVICES AND REVENUE IMPACTS

Infrastructure and Services

The demands which the project may place on existing infrastructure, including transportation, capital infrastructure (sewer, water, etc.) and social infrastructure (health and education services, social services, emergency services, community sports and recreation facilities, etc.) need to be more clearly delineated in the project report. The application provides no background or preliminary estimates of the cost of physical infrastructure and service requirements for the project.

In section D.7 above, some background observations are provided on the demand for and delivery of, various specific types of infrastructure and services for which the project may create a demand. These comments are intended to facilitate an appreciation of the public policy context for the provision of infrastructure and service support to development projects.

Taxes

Where Manalta anticipates that revenue benefits will accrue to various levels of government, the proponent should attempt to provide its own estimates of the impact of the project on government revenues (at all levels - federal, provincial, regional district and municipal). Specifically, Manalta is invited to identify project-related activity which will generate through taxes, permits, licenses, fees, etc. It would be helpful to the project committee if the project report were to differentiate between the construction and operations phases (including the various phases of the development plan), and to clearly outline assumptions used in calculating the estimates.

Information Required in Project Report

Specifications - D.9:1 to D.9.3

1. In the project report, Manalta must estimate and evaluate the following:

- **any expected increased use of local and regional public service infrastructure as a result of the project; and**
- **the capability and capacity of the infrastructure to accommodate the increased use and the implications for that increased use on congestion of facilities, accessibility for current residents, noise, public safety, the remaining capacity for future developments, etc.**

2. Where possible, Manalta must:

- **provide estimates of any significant additional infrastructure costs imposed on governments as a result of the project; and**
- **any elements of the plan which may reduce the cost impacts of the project to government, and the magnitude of the effect (e.g. a medical station at the mine to reduce impacts on health services, when existing capacity is not adequate).**

3. Manalta shall attempt to provide preliminary tax data, at all levels of government, as outlined in its application, Volume 1, page 178.

D.10 ACCOMMODATION REQUIREMENTS

A project of this type and size could have significant impacts on the demand for permanent, seasonal and temporary housing, during construction and operation, by both residents and workers. While the application notes the total number of hotel/motel rooms in the area and provides some information on the general housing situation, Manalta should also relate this information to both the employment levels and phases of the project to give better indication of the impacts of the project. Possible development

of a construction camp should also be looked into.

Information Required in Project Report

Specifications - D.10.1 to D.10.2

In the project report Manalta must:

1. clarify where the initial worker complement will live during the construction of the mine:

- **Does the proponent intend to rely on a camp facility?**
- **Alternatively, will rooms for workers be set aside in hotels/motels in the area?**

2. In addition to the basic accommodation information provided in the application, include information and analysis on:

· the types and cost of employee housing required, and the local availability of such housing for seasonal, part-time and full-time employees; and

· any plans that would address any housing shortage, if identified (e.g. any details on the provision of either camp facilities or other types of staff housing at the mine).

D.11DEMOGRAPHIC AND SOCIAL EFFECTS

Some people who live in the region have expressed the view that the project will be beneficial to the area on balance, diversifying the economy and provide a major year-round employment opportunity. Concern has been expressed by others in the local community that the project may have significant impacts on the community characteristics and quality of life in the local area and region, notably in and around Telkwa.

Potential project benefits are addressed in other sections of these specifications. This section deals with the demographic implications of project development, and the potential for specific community-level social problems.

Information Required in Project Report

Specifications - D.11.1 to D.11.2:

Demographic Analysis

1. Manalta, in its project report, must attempt to address the following issues through a qualitative discussion (supported by quantitative analysis, where possible) of the expected community impacts of the project on:

- **general population levels (i.e. is the expected in-migration of workers large or small relative to the existing population?) and the demographics of the area (e.g. if the workers moving into the area will be mostly young, single people, will this represent a significant increase in the proportion of this demographic group in the local population?);**
- **community stability and changes in the nature of the community; and**
- **direct impacts on First Nations communities, and the consequential economic and social implications (and potential mitigation strategies); and**

2. the demographic impact analysis required for specification #1 must include a breakdown of estimated population impacts in the local area and the surrounding region by age and gender, employment by sector, and family size and type, based on clear estimates of the numbers of jobs filled locally and by in-migrating workers.

Manalta should further make preliminary assessments of the project's impact on social issues such as youth on income assistance; local alcohol and drug abuse, and crime. Manalta is encouraged to consult with local, pertinent authorities prior to submission of the project report.

D.12 LIFESTYLE IMPACTS

Some local people in the project area who are anxious to preserve existing lifestyles are concerned that the project may lead to lifestyle changes which are not necessarily consistent with those features of the local lifestyle which they enjoy.

In the project report, Manalta is being asked to provide information which will provide the project committee with a basis for evaluating the lifestyle implications of the Telkwa project for existing local residents. The approach which is being adopted is to have Manalta itemise any changes which are expected to occur in a specified listing of identifiable lifestyle "elements", should the project proceed. It is also appreciated that it is difficult to quantify values for non-measurables such as recreational pursuits and aesthetics, and where that is the case, such quantification will not be required for the project report.

Information Required in Project Report

(While much of this information is more specifically required in other parts of Section D, Manalta is required to prepare a summary based on the data collected in response to previous specifications.)

Specification - D.12.1 to D.12.2:

1. In the project report, Manalta must, using a convenient comparative summary format to compare circumstances with and without the project development (e.g. a comparative tabulation), must summarize available information on the predicted implications of project development for the following lifestyle elements for residents living in and near the community of Telkwa:

- **availability of educational, health, police, justice and social assistance services;**
- **availability of local government services;**
- **capacity and demand for expansion/upgrading of local road systems;**
- **traffic volumes and flows, and commuting times, on local streets; and also on the public highway system;**
- **levels of community traffic, noise and congestion;**
- **capacity of facilities to dispose of sewage and solid waste;**
- **air and water quality, and pollution effects;**
- **local/regional water supply;**
- **crime rates and other community-level social problems;**
- **regional housing market/availability of affordable housing;**
- **community economic base/economic opportunities;**
- **employment/unemployment rates and opportunities;**
- **wages, family incomes;**
- **indoor recreational facilities;**
- **community aesthetics;**
- **access to outdoor recreational opportunities;**
- **tourism potential;**
- **fishing, hunting, wildlife watching;**
- **opportunities to hike, commune with undisturbed nature;**

- **changes in tax base, distribution of tax burden;**
- **demographics of project development (e.g. by age group and gender);**
- **implications for First Nations traditional use of the project area;**
- **population immigration associated with new employment opportunities;**
- **transient employees, drug and alcohol problems; and**
- **community stability.**

2. In the project report, Manalta must:

- provide an impact comparison of other coal mines close to small communities and their effect on the quality of life in those communities.

D.13 MONITORING PLAN FOR SOCIO-ECONOMIC EFFECTS

The information required in Manalta's project report under other parts of section D (above) will provide a general indication of the predicted socio-economic impacts of the project. However, the actual impacts will ultimately depend on the accuracy of the assumptions made in the analysis, other external influences and the effectiveness of mitigation plans.

The development of a monitoring plan is helpful in identifying the extent to which the positive socio-economic benefits are actually realised and the negative ones effectively mitigated, and enables the proponent to address any problem areas more effectively. A commitment to a sound monitoring plan may ease somewhat any local concerns over the prospect of project development, and may assist the proponent to ensure that its project will deliver the socio-economic benefits intended.

Information Required in Project Report

Specification - D.13.1:

1. In the project report, Manalta should make a commitment to a systematic monitoring of the socio-economic issues addressed in section D of these specifications, and must provide a preliminary overview of the monitoring approach which is envisaged.

D.14 ARCHAEOLOGICAL ISSUES

Preamble

The Archaeology Branch of the Ministry of Small Business, Tourism and Culture recommends that issuance of a Project Approval Certificate to Manalta be contingent on the prior completion of an archaeological impact assessment (AIA). This should include the identification and delineation of archaeological sites; assessment of site significance; identification of potential impacts to archaeological sites; and identification by the Branch of any impact management requirements. The AIA will require a Heritage Inspection Permit pursuant to Section 14 of the *Heritage Conservation Act* (*HCA*), for which application must be made by the archaeological consultant chosen to do the study. The implementation of any impact management measures involving additional data recovery will require a Heritage Investigation Permit under the same section of the *HCA*, prior to the occurrence of specific developments, although in some cases permitted activities may run concurrently with project development.

Previous Archaeological Studies

There have been five archaeological sites previously identified within the project area, as a result of studies commissioned by

Crowsnest Resources Ltd. in 1984 and 1990. These studies include a 1983 archaeological overview of the proposed project overview, and two archaeological impact assessments carried out in 1984 and 1990. Copies of the reports from these three studies have been included in Manalta's application as Appendix 10.

Four of the new sites, GdSs 1, 2, 3 and 4 are historic and relate to previous mining or logging activities in the early part of the 20th Century. These sites were found along Goathorn Creek during a 1984 AIA in the general area of Manalta's proposed Pit 3 and have been assessed as having an overall low significance, except in terms of their possible contribution to the local historical record. Manalta has indicated in the application its intent to confirm and map these sites in order to facilitate their avoidance during any mining operations. No other sites were found in this area at this time.

The fifth site, GdSs 5, is a prehistoric archaeological site consisting of a cache of three obsidian bifaces which was exposed during some 1989 mine-related road construction on the east side of Goathorn Creek in an area assessed in the 1983 archaeological overview as possessing low archaeological potential. The discovery of this site and Crowsnest Resources' concurrent amendment of its original application to include an area on the north side of the Telkwa River (Manalta's Pit 7 and 8) precipitated an additional AIA in 1990. No sites were found in the new area north of the river and the area around GdSs 5 was examined for other cultural remains with largely negative results. Manalta has indicated that, as the area around GdSs 5 will be disturbed by the development of Pit 3, it will ensure the completion of onsite archaeological monitoring during land altering activities to ensure mitigation of any impacts to additional cultural remains that may be exposed.

Information Deficiencies

Despite the completion of the above previous studies, the application is deficient from an archaeological perspective for the following reasons:

- the 1983 Archaeological Overview Assessment (AOA) defines general areas of low, moderate and high archaeological potential, but provides few details of the criteria used for the determination of these rankings. Furthermore, recently-completed 1:20,000 scale AOA maps for the Pac-Rim LNG Project provide a much more detailed schematic of the archaeological potential for those portions of the pipeline right-of-way (and an earlier proposed R/W option) that pass through much of the same area, and suggest that the area has an overall higher potential for the presence of archaeological sites than is indicated in the 1983 study;
- GdSs 5, an archaeological site of high scientific significance discovered in 1989, is located in an area of low archaeological potential, as defined by the 1983 AOA, and moderate archaeological potential, as defined by the Pac-Rim AOA. This also calls into question the validity of the 1983 study, and suggests that other unrecorded sites may be present in areas previously defined as having low potential and which therefore received only a cursory examination, or no survey at all;
- both the 1984 and 1990 studies suffer from the misconception that, because the Pit 3, Pit 7 and Pit 8 areas were subjected to previous logging and other onsite activities, they are considered to have low potential for the presence of archaeological sites. Such activities would not affect the presence of archaeological deposits, but only their integrity and possible significance. Acceptance of this line of reasoning during these studies has no doubt affected the level of AIA work that was undertaken;
- the areas on the north side of the Telkwa River including the area of the proposed bridge, had previously been assessed in the 1983 AOA as having a high archaeological potential, yet are given a low potential in the 1990 study, with no detailed explanation being given to address this discrepancy;
- neither the 1984 nor the 1990 AIA reports include maps which indicate the level of survey intensity within those areas examined and provide only minimal description of the survey methodology. Furthermore, no shovel test frequency or locational information is given for those tests excavated for the purpose of locating subsurface archaeological deposits, necessary information to be included in any AIA report as support for any recommendations to be made by the reviewing project officer;
- the terrain covered by the proposed Tenas Pit, Tenas West Pit, and the proposed haul road and power line into this area, was not subjected to survey and therefore, is not reported on in either of the two AIA reports. Furthermore, the proposed haul road on the north side of the Telkwa River does not appear to follow the same alignment as the 1990 proposed road, suggesting that another examination of this route is warranted;
- Manalta's proposed mine access and haul road route east of Pit 3 roughly parallels the proposed rail spur route #3 described in the 1984 study, of which only the far eastern approach to the Bulkley River was briefly examined because of the

preconception that most of the route was located in an area of low archaeological potential. However, as indicated in the Pac-Rim AOA mapping, portions of this proposed route pass through areas of moderate and high archaeological potential which were ignored in the earlier study; and
- the recording and assessment of site GdSs 5 is deficient in that very sketchy locational data is given for the site, no information is provided on the subsurface testing apparently carried out, and the artifacts and other cultural material were never turned over to the official permit repository, as the consultant was required to do.

Furthermore, Ian Wilson of I.R. Wilson Consultants, the archaeological consulting firm which conducted the earlier surveys, indicated in conversation with archaeology branch staff the lack of any detailed plans provided to his firm by Crowsnest Resources to help guide his examinations in the field during the 1983 and 84 studies. This lack of available information at the time is reflected in the lack of detailed report data.

It should also be noted that attempts were made to locate archaeological field notes for each of the above three studies, in the expectation that they could provide detailed supplementary information not contained in the AIA reports. It was determined that the notes from the 1983 and 1984 projects had been discarded years ago (IR Wilson's policy is to retain them for a period of seven years after project completion), and that no such notes were taken during the 1990 study, as should have been done.

Information Required in Project Report

Specification - D.14.1 to D.14.3 :

As stipulated by the Archaeology Branch, Ministry of Small Business, Tourism and Culture, in correspondence dated June 26, 1997, Manalta is required to:

1. complete an archaeological impact assessment (AIA) of the project area, including possible transmission line and access corridors. A Heritage Inspection Permit, issued by the Archaeology Branch under section 14 of the *Heritage Conservation Act*, **will be required for this study. Any subsequent mitigative measures deemed necessary for the further recovery of archaeological data from protected sites will require the issuance of a subsequent Heritage Investigation Permit, issued under the same section of the *HCA*.. The area covered by the AIA should include, but not be limited to:**

- the proposed coal preparation plant, mine maintenance facilities, mine service facilities, tailings disposal area, mine access and haul road and rail loadout area,
- the proposed Tenas Pit, West Pit, and associated waste dump areas, and the proposed haul road and power line into this area,
- the proposed Pit 3 and associated waste dump area,
- the proposed Pit 7, Pit 8, and associated waste dump areas, and their proposed associated haul road and power line(s), including the proposed bridge across the Telkwa River,
- the potential pits, for which exploration is currently in progress, as noted on Figure 2-1 of the project application,
- the area around site GdSs 5, which should be re-examined, retested and remapped, and for which management recommendations should be resubmitted; and

2. implement those impact management measures, if any, deemed necessary by the Archaeology Branch, after receipt of a letter from the Branch outlining these requirements; and

3. should the results and recommendations of the previous studies indicate unavoidable impacts to protected archaeological sites from development activities, the Branch may require that Manalta apply for an Alteration Permit pursuant to Section 12 of the *Heritage Conservation Act*, to authorise such impacts.

Additional Background Information

It is suggested that Manalta make use of the 1:20,000 scale AOA mapping done for the Pac-Rim LNG Project, currently housed at the Archaeology Branch, in order to define the levels of survey intensity required for each development area. For those areas not covered by these AOA maps, the data likely can be extrapolated and the archaeological potential assigned accordingly.

Manalta should note that applications for Heritage Inspection Permits (and Heritage Investigation Permits and Alteration Permits, if necessary) all require up to 35 days for review before actual permit issuance. Up to 30 days of this period is to allow for review by First Nations groups in the project area, to whom the Archaeology Branch is obligated to send these documents.

E. FIRST NATIONS ISSUES

Preamble

The *EA Act* contains requirements for consultation (statutory) with First Nations to identify all project impacts. The *EA Act* (s.22) further identifies the potential impacts of the project on the exercise of Aboriginal rights as a matter that may be included in a project report. The information gathered on potential impacts on traditional uses and activities is intended to contribute to an assessment made by the government on potential unjustifiable infringements to Aboriginal rights in order for the ministers to fulfill legal obligations. The identification of potential unjustifiable infringements requires both the involvement of First Nations in identifying their Aboriginal rights and consultations with First Nations to determine the potential adverse impacts of projects upon the exercise of those rights.

There is an understanding among provincial agencies that the government's legal obligation to avoid unjustifiable infringements of Aboriginal rights will be fulfilled as part of the environmental assessment process and will not have to be repeated by agencies in post-certification approvals (unless there are significant design changes, or the certification level assessment has not been done at a sufficiently detailed on-the-ground level). However, agencies will continue to notify and inform First Nations and seek their comments on post-certification permits and approvals. The *Guide to the British Columbia Environmental Assessment Process* (Appendix III, First Nations Issues) outlines obligations, roles and responsibilities.

Information Required in Project Report

Specifications - E.1 to E.5

As stipulated by the Environmental Assessment Office, Manalta is required to:

1. make its best efforts to identify the impacts of the project on the exercise of traditional uses and activities. It is recognised that such identification usually results from a First Nation identifying its traditional uses and activities (either as a response to a request from the EAO and the proponent, or through consultative processes), or as a result of specific studies undertaken with the co-operation of First Nations who have indicated that there are potential adverse impacts to the exercise of traditional uses and activities. The Terms of Reference for any such studies must be approved by the EAO in consultation with the First Nations and Manalta;

2. detail measures to prevent or mitigate any significant adverse effects on the exercise of traditional uses and activities;

3. provide a summary of consultations undertaken, and planned, with each of the First Nations identified as being affected by the project (those invited to participate on the project committee);

4. Manalta must report on the results of consultations and give details (unless specifically prevented from doing so as a result of bilateral agreements between Manalta and a First Nation, in which case, it should be so noted) of the identification of impacts on the exercise of traditional uses and activities; and

5. in cases where Manalta is required by these specifications, or is reliant upon working jointly or cooperatively with an

agency or First Nation to collect information or undertake studies, and, where the Executive Director is satisfied that Manalta, despite efforts made in good faith, has been unable to do so, Manalta is to provide the information, and make its assessment, independently.

F. CUMULATIVE EFFECTS

Section 22 of the BC *Environmental Assessment Act* provides for the collection and analysis of data necessary or useful to enable the assessment of probable cumulative effects of a project. As such, the information on cumulative effects, set out below, is required.

While, at the present time, there is no *Canadian Environmental Assessment Act* (CEAA) trigger for the study of cumulative effects, the project committee has determined that environmental effects relating to some project components are a strategic issue for the Telkwa project. In particular, the project committee has identified the following issues to be addressed in a cumulative effects assessment:

- transportation/bridge adequacy/logging/mining/public traffic;
- housing and municipal infrastructure;
- social needs;
- freshet events/water quality;
- incremental loss of habitat; and
- air quality.

Some basic concepts for assessing cumulative effects of the project are:

- effects of the project can combine and interact with the effects of other projects and activities, within a defined area, to produce an aggregate effect;
- assessing cumulative effects of the project requires that its effects be considered in combination with the effects of current and past projects and activities, as well as the effects of proposed projects and activities that are currently in a government approval process (e.g. activities for which applications for permits or approvals have been submitted, or for which plans are actively being developed, etc.);
- the effects of uncertain or hypothetical projects or activities need not be considered;
- the only effects of other projects and activities that need to be considered for cumulative effects assessment are those that combine or interact with the effects of the project;
- cumulative effects should be considered throughout the area in which project related activities occur and encompass all phases of the project; and
- cumulative effects may occur indirectly, may be delayed or may occur at distance from a project specific source.

The cumulative effects assessment is not expected to be as detailed as for the consideration of direct project impacts. Much of the cumulative effects assessment information will be qualitative, rather than quantitative. It should be based primarily on available information and use best professional knowledge and judgment.

Cumulative Effects - General

Manalta is required to consult with government agencies when developing the framework for, and undertaking the cumulative effects assessment work, to determine whether the required information may already be available through government sources.

APPENDIX A

PUBLIC ISSUES AND CONCERNS RAISED DURING THE REVIEW OF THE PROJECT APPLICATION AND DRAFT SPECIFICATIONS

Under the EA process, the project committee and the Environmental Assessment Office are expected to ensure that adequate opportunities are provided to the public to express its views on projects which are under review, and that due consideration is given to the public's views as the review progresses.

However, the EA process is not a referendum process, and the project committee does not make its recommendations to Ministers solely on the basis of public opinion. Much of the work of the project committee is devoted to the policy and technical analysis of issues, which are raised by all stakeholders and government agencies. The project committee will not be ready to submit its report and recommendations to the Ministers until it is satisfied that the issues raised by the project have been adequately assessed and that reliable conclusions can be drawn (whether or not they can be resolved).

In principle, there are four possible project committee responses to the views expressed and the issues raised by the public on a proponent's application for a project certificate:

- the project committee agrees that an issue is relevant to the EA review of the project, and that further reporting on the topic is necessary, and for this reason, has incorporated the substance of the issue in the project report specifications;
- the project committee agrees that an issue is relevant to the EA review of the project, but believes that the issue has already been adequately addressed in the application filed by the proponent;
- in the project committee's view, while an issue may or may not be legitimate, it is beyond the scope or jurisdiction of the EA process and the project committee does not intend to pursue it; and
- the project committee does not consider the issue to be valid or significant as it relates to the EA review of a project

The public review of Manalta's application for the Telkwa Coal Mine project closed on May 5, 1997.

The public was also invited to comment on the draft project report specifications. This ensured that the issues and concerns identified during the public review of the application were addressed as part of the environmental assessment review process. Comments received prior to August 15, 1997 were considered as part of the review. In total, the Environmental Assessment Office received approximately 40 submissions from individuals or groups of individuals. All relevant submissions were made available to the general public through the Project Registry as originally submitted and required by the EA Act. As well, these submissions were provided to Manalta and key review agencies for their consideration.

Issues related to the application and/or the draft project report specifications are shown in Attachment 1 of Appendix A. This table will guide respondents to the sections (chapters) of the Draft Report Specifications where their concerns and issues are addressed. It is up to Manalta to address these issues in its Project Report, as specified in the project report specifications.

A number of public comments included issues such as the affect of the coal mine on global warming; the economic justification for developing further mines in British Columbia; the political necessity of curbing economic growth, etc. Such issues are not scoped into the review of the project, as they are deemed outside the EA process.

Respondent	**Date**	**Issues and concerns**	**Covered in Section**
Duncan/Cathy/family Bailey	3 May, 1997	• Impacts on federal/provincial/local taxes and royalties • Impacts to ground water	D.9 C.5/C.6

D.A. Baker/Judith McLean	2 April, 1997	• Loss of “hundreds of service jobs in the tourism sector” to create 150 jobs for 20 years • Sustainable industries will be destroyed	D.2/D.3/D.4 D.2/D.3/D.4
Allen Banner	5 May, 1997	• Air and water quality and quantity • Noise pollution • Specific concern regarding impact to groundwater quality and quantity • Requests monitoring program	C.2/D.5 D.5 C.5 C.11
Einar Blix	2 April, 1997	• Concerns regarding proximity of mine to community • Doubts continuity of mine • Concerns with slope stability of tailings disposal area • Wildlife and wildlife habitat impacts • Impacts to recreation access	D.6 General Comment B.2/C.3 C.8 D.5/D.7
Einar Blix	26 July, 1997	· Concerns with lack of reference to some public submissions	APPENDIX A
Phillip & Carla Burton	5 May, 1997	• Global impacts of release of carbon dioxide from coal burning • Oversupply of Pacific Rim coal market and shut down of Tumbler Ridge • Impacts on adjacent agricultural and residential areas • Impacts to wildlife and wildlife habitat · ARD • Coal dust • Involvement of First Nations • Impacts to community infrastructure and community stability issues • Reclamation concerns	C.2 C.10/D6 C.8 B.2/C.3 C.2/D.5 E D.8/D.9/D.10/D.11/D.12 B.2

Colleen Carroll	21 July, 1997	• Long term liability for ARD • Water quantity • Air quality from coal dust, and other contaminants	B.2/C.3 C.3/C.4/C.5/ C.6 C.2/D.5
Colleen Carroll	26 March, 1997	• EAO in conflict of interest position • Composition of Project Committee and lack of local reps. • Government control and focus on jobs leads to poor decision-making • Is short term money maker	General Comment 5.1 D.2 D.3/D.4
David Cody, T.E.A.C.H.	8 April, 1997	• Is a pristine wilderness area • Economic benefits only for a few • Focus must be on sustainability • Discussion of different energy technologies	C.1 D2/D.3/D.4 General Comment Beyond Scope of Review
David Cody, and representatives of T.E.A.C.H	21 April, 1997	• Request improved access to information and greater decision-making role • Request membership on the Project Committee	5.1 5.1
Nancy Cody, T.E.A.C.H	27 April, 1997	• Explains mandate of TEACH • Requests an impact comparison to other mines close to small communities and affect on quality of life · ARD • Concerns regarding noise and light pollution and impacts to air and water quality • Impacts to ALR lands • Long term maintenance of tailings ponds and other ARD control measures • Concerns regarding the market, and world value of coal	General Comment D.12 B.2/C.3 C.2/C.4/C.5/C.6/D.5 C.10 B.2/C.3 Beyond scope of review D.2 C.8

		• Socioeconomic impacts of mine shut down • Impacts to wildlife • Need for sustainable employment • Additional research into archaeological	D.2/D.3/D.4 D.14
Nancy Cody, T.E.A.C.H	28 July, 1997	· Concerns with omissions of some public comments in Appendix A and apparent editing of comments in that appendix	APPENDIX A
Nancy Cody, T.E.A.C.H.	4 May, 1997	Extensive list of concerns re: • Voice in decision-making • Impacts to wildlife · ARD • Greenhouse gases • Air quality • Coal dust • Community impacts • Sustainable employment • Quality of life	5.1 C.7/C.8 B.2/C.3 C.2 C.2/D.5 C.2/D.5 D D.2/D.3/D.4 D.11/D.12
A.B. Creswell	5 May, 1997	• Explains process of coal loading into railcars and how this generates excessive amounts of coal dust. • Concerns regarding dust impacts and impacts to health • Impacts on tourism and reduced revenues • Impact on quality of life • Long term stability of tailings pond and other ARD control measures • Impacts to wildlife • Global implications of burning coal	C.2/D.5 C.2/D.5 D.5 D.11/D.12 B.2/C.3 C.8 C.2

Sally & Randy Cunningham	3 May, 1997	• Sustainable use of energy sources • Job opportunities for locals/local saturation • Loss of tourism revenues · ARD • Impacts to wildlife and fish • Road/coal dust • Impacts from mine and load-out noise • Visual impacts and affect on community • Community revenue generation/taxes • Traffic impacts • Impacts on personal lifestyle and property	Beyond Scope of Review D.2 D.5 B.2/C.3 C.7/C.8 C.2/D.5 D.5 D.5 D.9 B.3/D.7 D.11/D.12
Christoph Dietzfelbinger	5 May, 1997	• Impacts on backcountry tourism • Mine would dominate local economy and would not facilitate creation of sustainable jobs	D.5 D.2/D.3/D.4
Brenda G. Donas	28 May, 1997	• Did not vote in support of Telkwa Coal Mine • Awaiting full range of information before making decision regarding support	General Comments
Glenda Ferris (North Ecology Action Committee Houston)	27 April, 1997	• Three main concerns: • Land use decision on whether to proceed with a series of open-pit coal mines as best use of land • Mine life/operational environmental and community impacts, disturbance patterns and risks associated with this project • Watershed issues of ARD reaction and long term containment	B.2/C.9/ C.10/D.6 B.1/D B.2/C.3/C.4/ C.5/C.6

Glenda Ferris	11 February, 1997	• Requests membership on Project Committee • Concerns regarding lack of transparency of EA process • Concerns regarding lack of detailed information from proponent • Lack of public dialogue	Concerns not related to draft specifications
Glenda Ferris	21 February, 1997	• Concerns regarding policy discrepancies for NPR criteria for blended waste dumps and construction of PAG waste dumps • Concerns regarding Chair's neutrality	Concerns not related to draft specifications
Rosemary Fox	25 February, 1997	· Concerns regarding the role of MEI, MELP and EAO in the EA process	Concerns not related to draft specifications
Rosemary Fox (Sierra Club of British Columbia)	28 April, 1997	• Impacts on aquatic ecosystems particularly from ARD from tailings and waste rock, and the exposure of PAG pit highwalls • Impacts on terrestrial species and ecosystems particularly long term loss of natural biodiversity and trace metal uptake in vegetation • Socio-economic considerations such as mine plan changes and comparing the benefits with negative effects • Climate change considerations • Technological change considerations • Market considerations	B.2/C.3/C.4/C.5/C.6/C.7 B.2/C.8 B.1/D.2 C.2 Both points are beyond the scope of review
Rosemary Fox	August 13, 1997	• Re-structuring of specs • Specs need to provide clearer direction and not be ambiguous • EAO to establish guidelines on format so agency submissions are consistent and meet agreed-upon criteria • Public letters omitted from the appendix • Would like to see: • A literature search of trace	This has been taken under advisement APPENDIX A B.2 Beyond the scope of review D.6 D

		metals uptake in vegetation at reclaimed coal mines • An analysis of market outlook • Analysis of costs of the project on amortizing investment in equipment, transporting coal to port of export and federal and provincial subsidies to Manalta. • Need to study the air quality, noise, visual and economic impacts of the haul road/load out facility on adjacent land uses. • Page 59 (last Para) – should delete the use of the word "likelihood" • Socio-economic analyses should be done by independent analysts • Climate (C.1.1) – should include historic information • Metals uptake in vegetation (C.8) p. 54 • Need to answer what will be the productive end land use • Air quality impacts (D.5 (B) – Should also assess air quality impacts on other types of recreational use • Noise Impacts (D.5(D) – careless drafting • Fish and Wildlife Recreation (D.5(F) – Specs make a distinction between potential and anticipated impacts on non-fishing wildlife activities but imply there may not be any on fishing. • Road Access Issues (D.7.4) – should include impacts at the Railway Avenue/Ski Hill Road crossing in Smithers and other affected railway crossings • Should include cumulative effects and risk assessment	D C.1 B.2 B.2 D.5 D.5 D.5 Beyond Scope of Review F
Jim Fulton (The David Suzuki Foundation)	16 July, 1997	· Requests issue of coal be referred for overall environmental impact assessment and not review coal projects one at a time	Beyond scope of review

Reene Granlin	10 April, 1997	• Argues that project creates few jobs per unit of resource extraction • Must plan for long term economic stability and finding resources within ourselves	D.1/D.2 General comment
Gord Gunson (Pacific Inland Resources Division, West Fraser Mills Ltd.)	6 March, 1997	• Concerns, as a forest licensee: • in obtaining timber volumes from the harvest of the coal mine site • access restrictions to crown land as a result of the project • site rehabilitation • compensation of the crown forest resource base	B.2/C.9
Tony Harris	5 May, 1997	• Job creation and benefits/opportunities for locals • Concerns regarding the availability of future resources for descendants	D.2/D.3/ Beyond scope of review
Robin and Lita Hawes	3 April, 1997	• Coal/road dust issues, particularly with the wind patterns and speeds in the Telkwa River Valley • Impacts to surface and groundwater quality from heavy metal contamination • negative impacts on (river) sport fishing • negative impacts on real estate values	C.2/D.5 C.4/C.5/C.6 C.7/D.5 D.6
Virginia Hoover	28 July, 1997	· Is in favour of project and believes it will be good for the area	General Comment
Jackpine Rd. and South Skollhorn Rd. residents (c/o Bob Beemer)	3 June, 1997	• Concerns focus mainly on contamination of groundwater, road dust, noise from blasting and haul road, location of clean coal haul road, and buyout options if the location of pits L402 and L403 are too close • Wants well and air monitoring program established	C.1/C.2/C.4/C.5/C.6/C.11/D.6/D.7 C.11

Stan Kania	16 March, 1997	• Concern regarding impact to tourist based industry and lack of sustainability of mining jobs • ARD and impacts to fisheries • Coal dust impacts on ski areas • Impacts to the ALR • Stability of ARD pond in perpetuity	D.5 B.2/C.3/C.7 C.2/D.5 B.2/C.10 B.2/C.3
Alan Kumlea	21 April, 1997	• Impacts on community quality of life for present and future generations • Cites issue of increased greenhouse gases	D.12 C.2
M.P. McLaughlin	31 July, 1997	• Quality of life will be impacted • Coal dust settles on everything and there is incessant rumble of blasting and machinery • Community does not need noisy industrial neighbours • Impacts to infrastructure	D.1/D.11/D.12 C.2/D.5 General Comment D.8/D.9
Dianne Meyers	26 March, 1997	• Believes family will be detrimentally affected by the project • Project located in close proximity to property • Concerns with impacts to air and water quality • Local marsh is used by migratory birds, which is not mentioned in Manalta brochure • Abundance of wildlife which will be impacted	D.11/D.12 General Comment C.2/C.4/C.5/ C.6/D.5 C.8 C.8
Harvey Mitchell, Smithers	30 April, 1997	• Manalta has provided adequate opportunity for input and openly discussed issues • Issues of importance are socio-economic	General Comment D

Pat Moss (Northwest Institute for Bioregional Studies, Smithers)	2 May, 1997	· Several aspects of proposal require in-depth analysis and evaluation. These are: · ARD • Wildlife impacts, especially on rare, threatened and endangered species • Impacts to ecosystem/plant communities • Impacts on point source habitat elements • Impacts on landscape ecology • Impacts to recreational opportunities • Impacts to First nations • Questions socio-economic impacts within local economy; social services; public health	B.2/C.3 C.8 C.8 C.8 C.8 D.5 E D.1/D.2/D.4/ D.8/D.9
Richard Overstall	5 May, 1997	Concerns focus primarily on acid mine drainage (AMD), specifically: • Burden of proof in evaluating AMD potential • Proper reporting of US studies • Proper quotation of all references and consideration of findings • Difference between the geology of the Appalachian deposits and the Telkwa deposits	All are in B.2/C.3 C.3
Murray and Nancy Olivier	5 May, 1997	• Concerns regarding an out of province company utilizing BC resources. • Tourism is far more sustainable • Concerns regarding change is lifestyle	D.2 D.5 D.12

Ken Penner	12 August, 1997	• Concerns that proximity of project to residential areas will affect air quality, water quality, and have noise and property value impacts • Expect Manalta to offer buy-out to any resident of Jackpine Road • Helps pit should be included in the environmental assessment • Possibility of rail spur to connect mill site should be investigated	D.11/D.12/ C.2/C.4/C.5/ C.6/D.5 Beyond scope of review Beyond scope of review Beyond scope of review
Sheila Peters (Northwest Community College, Smithers)	25 April, 1997	Report on the Telkwa Coal Community Forum held April 19, 1997 at the Northwest Community College. Main topics discussed were: • Impacts to land use • Environmental impacts • Economic considerations • Community involvement in the assessment process • Negative visual impacts	Report on discussions that took place at the Forum
Peter Schopfer	6 May, 1997	• Dust suppression • Noise impacts • Concerns regarding impacts to agricultural land	C.2/D.5 D.5 C.10
Teri Sims	2 May, 1997	· Quality of life destruction	D.12
Walt and Peggy Taylor	7 August, 1997	• Concerned that members of the public cannot be appointed to the Project Committee • Has there been adequate consultation with Wet'suwet'en? • Issue of impact of burning fossil fuel on global climate not being addressed	Concerns not related to draft specifications E Outside scope of the review
Ivan Thompson	3 April, 1997	· Concerns regarding possible lack of participation in scheduled April 19 community dialogue	General comment

Will Tompson	24 April, 1997	· Approval of project is vital to Smithers-Telkwa economy	General comment
Elizabeth Trappl	23 April, 1997	• Concerns focus on air quality given prevailing wind direction and updrafts and thermals • Wants to know if Manalta will guarantee no coal dust in the town of Smithers and on Hudson Bay mountain	C.2/C.5 Outside scope of the review
T.E.A.C.H., Smithers (petition)	21 April, 1997	• Need for timely, accurate information • Request membership on the Project Committee	General comments
Lorne Warren	30 April, 1997	• One miner, according to Price Waterhouse Study, equals 16 service industry workers in terms of taxes paid • All issues are important to consider	General Comments