

CONTROL OF LOGGING OPERATIONS

J.H. Simmons  
Deputy Operations Manager  
D.P. Crequer  
Soil Conservator  
Waikato Valley Authority

INTRODUCTION

The aim of this paper is to firstly outline the involvement of W.V.A. in forest operations (not just logging), and then to put forward as a basis for discussion a few thoughts on limited scale logging activity, and its effect on water and soil values. Finally, we will outline some aspects of the small scale forest areas established by W.V.A. for water and soil protection purposes. These small forest areas will ensure that we become directly involved in limited scale logging activity, and will help keep us honest in our dealings with other parties similarly involved.

CURRENT CONTROLS ON LOGGING OPERATIONS

General

Many of New Zealand's Catchment Authorities administer statutory controls over activities which they believe can be harmful to water and soil values. These activities include tracking, cultivation, land recontouring, burning, mining and quarrying, and probably most commonly land clearing and forest operations. Catchment Authorities are fairly autonomous bodies, and whilst working toward the same ends may use different methods, as dictated by local problems, needs and politics. One would hope however, that the industry will find similar standards required throughout the country.

The statutory controls include notices under s34 and s35 of the 1959 amendment to the 1941 Soil Conservation and Rivers Control Act, and the Bylaws constituted under s149 and s150 of the principal Act. In some areas voluntary guidelines are used. Some thought has been given to use of the 1967 Water and Soil Act. W.V.A. has in fact successfully prosecuted an indigenous logging operator under this Act, but staff feel that various aspects of the 1941 Act provide a better framework for us to become systematically involved with the forest industry in a non-adversary role. We consider the legal controls to be a means to an end (that end being the protection of water and soil values) not an end in themselves. That is something we must constantly remind ourselves of when administering these controls.

To face reality however, if we didn't have a little bit of

muscle, most of the forest industry wouldn't take us seriously.

### W.V.A Controls

The history of the W.V.A.'s formal involvement with the forest industry began in 1975, when after lengthy discussion with interested parties, mostly farming and forestry representatives, the first Conservation of Ground Cover Bylaw was instituted. After a 2 year trial and further discussion with interested parties, the current "Conservation of Ground Cover Bylaw 1977" was established with only minor alteration from the original. This Bylaw requires that any person or organisation intending to carry out certain practices on freehold or Maori land, on an area of greater than 1 ha annually, must first obtain a permit from W.V.A. These practices are :

- (i) The destruction or removal of trees, shrubs or plants but excluding grasses, farm and horticultural crops.
- (ii) Generally roading, tracking and related earthworks facilitating the foregoing activities under (i) above.

Since establishment of the Bylaw some 637 permits have been issued, although the bulk would be for on-farm land clearing for pasture establishment. Probably only 5-10% would be for exotic forest operations, and about as many for indigenous logging. These figures are only estimates. Only rarely has an application been declined, but a substantial number are issued conditional on certain conditions being adhered to. There are appeal provisions within the Bylaw, and these have been used four times - three of these were for farm clearing operations, and one for indigenous logging. One prosecution only has been brought, against an indigenous logging operator. This was successful.

### Operation of the Bylaw

Although a prime aim of the original Bylaw was to attain some control over forest operations, the advent of the Government's Land Development Encouragement Loan scheme in the late 1970's and early 1980's brought about a huge surge in on-farm clearing of bush and scrub for conversion to pasture. This occupied our limited staff resources fairly fully, resulting in relatively little emphasis being placed on forest operations. With an eye to the projected expansion of logging activity in the near future this trend is likely to be reversed.

As far as the day to day administration of the Bylaw is concerned with respect to forest operations, various local arrangements have evolved for the larger scale operations. This has been possible within the framework provided by Bylaw only because of generally good working relationships developed between W.V.A. and forestry staff. New Zealand Forest Products Ltd has a very large forest within the W.V.A. region, and the monitoring system which has evolved here is an example of what we would like to see exist with all large operations. In this case, W.V.A. issues one permit to the company each year to continue its various forest operations. This keeps the paperwork straight, and is about the

only reference ever made to "controls". The company provides W.V.A. with monthly dispositions of its logging and roading activity, and regular joint inspections are made. Specific areas to be looked at on any particular visit can be selected by either party. Existing or potential problem sites can be discussed on the ground, along with remedial or preventive action which may be required. To date the system has worked well, I believe from the point of view of both parties. Of course, no major dispute has yet occurred to test the relationship, and hopefully this will remain the case. From the water and soil aspect the company's activities, whilst not perfect, are generally of a good standard. W.V.A. involvement is with the aim of bringing about change to an existing operation in a steady and relatively painless manner. The regular contact enables our staff to learn and understand the very real practical and economic constraints the staff of a commercial forest company work under, and a proposed staff exchange will help both parties better understand the other's viewpoint. With time it is hoped that W.V.A involvement in such large scale forest operations will be viewed by both parties as a normal and fairly routine matter.

#### LIMITED SCALE LOGGING

Limited scale logging activity is, and will continue to be, a quite different matter, and it is in this area that I foresee the major involvement of W.V.A. in logging operations.

#### Definitions

I consider there to be five different categories of limited scale logging that concern us. They are as follows :

1. Selected sites within a large-scale forest operation. These sites will be those which cannot be logged by the methods normally employed in that forest and still meet the standards required by the Catchment Authority.
2. Most small commercial forests. As a rough rule of thumb, those forests not large enough to warrant a permanent on-site headquarters.
3. All on-farm logging operations.
4. All indigenous logging operations.
5. Most forest areas established for water and soil purposes. Areas where a large scale land use change has taken place may be exceptions.

#### Effect of Limited Scale Logging on Water and Soil Values

Each of these categories presents different problems, but there are four factors which they usually have in common, and which tend to promote difficulties in meeting high water and soil standards. They are :

1. Small areas involved.

2. Access problems, both practical and legal.
3. Difficult site characteristics.
4. Dominating these, although in part caused by them, marginal economic factors.

The following are a few comments relating to each of the above 5 types of limited scale logging.

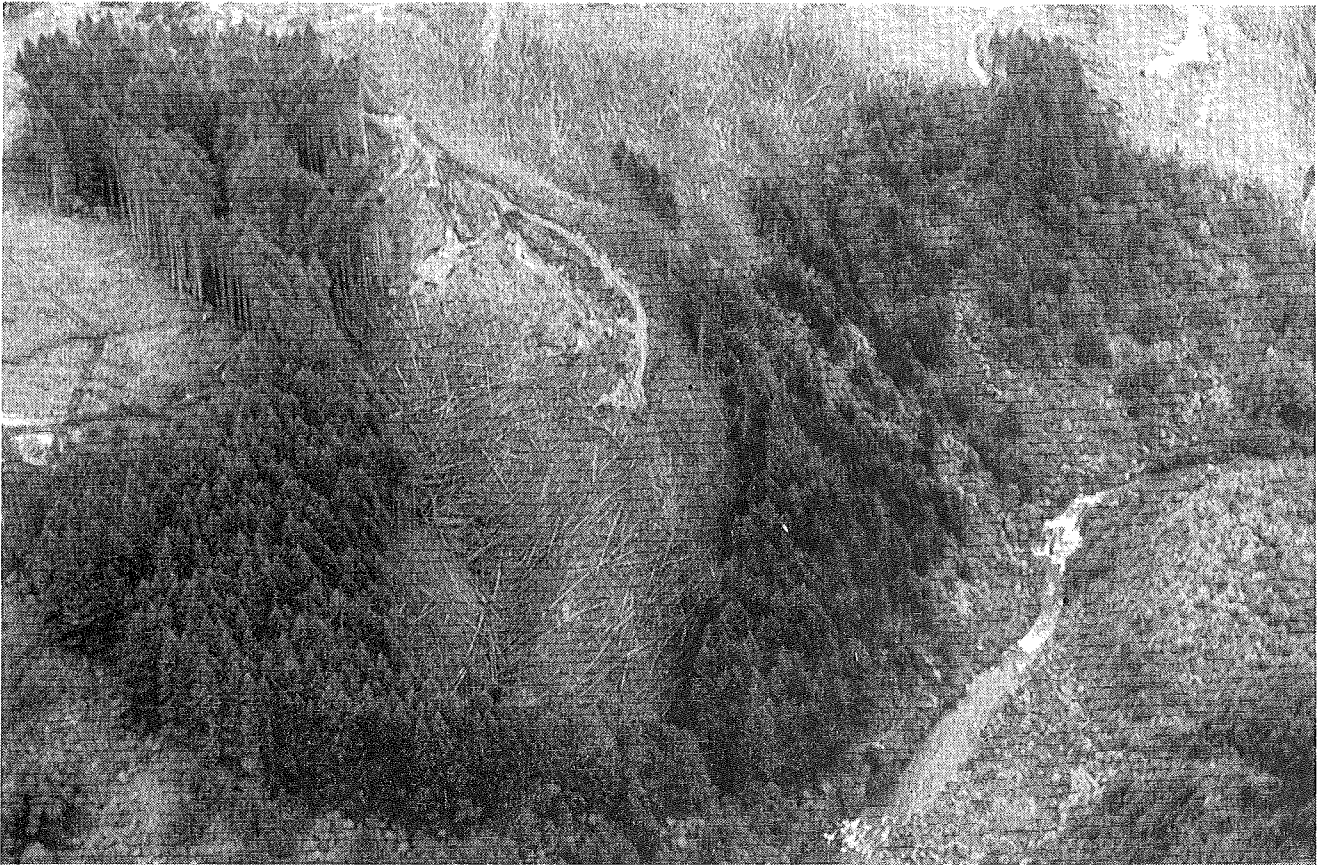
1. Selected sites within a large-scale forest operation

These sites have one advantage, this being the existence of a well developed forest infrastructure to service them. Should there be sufficient such sites in a forest special attention can be paid to them. For example, one crew may be trained and equipped to handle them. These sites must be identified as such in order that the logging gang involved is not expected to meet similar production targets to gangs employed on more straight-forward sites. Of more concern, is a forest where very few such sites exist. There is then more likelihood that attempts will be made to log them with methods, machinery and cost structure applying to the remainder of the forest.



*".... attempts will be made to log them with methods, machinery and cost structure applying to the remainder of the forest ...."*

(LIRA Photo CN40/1)



".... one crew may be trained and equipped to handle them...." Ecologger  
hauler setting above Rangitaiki River in Kaingaroa Forest.

## 2. Small commercial forests

(LIRA Photo CN184/17)

The comments made above also apply here. Further to this, it is likely that some forests may be of a size that only limited logging resources are available. In the large forest for example, it may be routine to have hauler, skidder and tractor methods available. Whichever of these methods is best suited to each site can therefore be applied. In the smaller forest however, there may for example be only one site not easily logged by tractor or skidder. It is possible that in such a case extensive tracking will be done to enable the logs to be extracted. This means that logging such a site in the small forest would cause environmental problems not caused by the same site in the larger forest.

## 3. All on-farm logging operations

Logging operations on farms occur on a wide range of sites. Many, such as shelter belt logging, take place on easy topography close to roads. These normally cause Catchment Authorities few problems. The resident farmer, concerned about damage to his paddocks, keeps a reasonable control here. The most common problem is the use of gullies to bulldoze slash into.

However, on-farm operations more commonly occur on the roughest, steepest part of any given property, the areas to which forestry has traditionally been banished. In general, logging of such sites tends to be primitive, unimaginative, and environmentally a little shoddy. Overall methods used follow a similar pattern: one bulldozer, D6 or thereabouts, with a blade and winch, but no arch, is used. Two to three men are involved, and there wouldn't be a safety helmet in sight. The machinery is often old, debt servicing is high, and no planning of the operation is involved -

least of all, planning to avoid environmental damage. Access roads are often required, and are built to the lowest possible standards. Water control is kept to the minimum which will enable the track to remain passable for the period of logging activity, and little thought is given to stability problems on earthworks once logging is complete.

In many cases it is not that these operators don't care about water and soil values - it is more likely that they do not perceive their activity as being important. Any environmental protection methods will only be applied where they cause little or no reduction in profit on the job.

There are many such operations in existence. The men concerned are often loners, and do not belong to the Loggers Association or Contractors Federation. They are hard to find, difficult to educate in making significant changes in their operations, and are unlikely to be found at seminars such as this. They are in fact a part of the logging industry, but a fragmented and independent part.

Looking to the future, the on-farm logging operation is likely to be the one causing most headaches for W.V.A. A special case within the on-farm logging scheme will follow any significant swing to Agroforestry, a current buzzword in the farm diversification scene. The practical, and more so the environmental, difficulties to be faced in logging many of these "Agroforestry" sites are rarely considered, and even then often not taken seriously. There is a real element of "plant and hope", and it is to be hoped for everyone's sake that this pays off.

#### 4. Indigenous logging operations

Almost all the comments made in 3 above apply equally to this case. Indigenous operations often cause Catchment Authorities the greatest concern, not because the trees concerned are native rather than exotic, but because of the location of the operations. Indigenous forest now is often found as protection forest in headwater areas of catchments, and as remnants in steep gully areas. Any rise in the market value of native timbers has a double edged effect from the water and soil aspect. Better returns could enable logging operators to live with higher standards insisted upon by Catchment Authorities. Unfortunately, such an increase in returns could push jobs which are now uneconomic due to logging difficulties into the marginally economic range. This would have the effect of increasing the potential for environmental damage caused by such operations.

In general, indigenous loggers are the same operators as those doing small on-farm logging operations.

#### 5. Most forest areas established for water and soil purposes

Such sites are common in parts of New Zealand, and more specific comment will be made on those established by W.V.A. later in this paper. It is likely that examples of this category will be seen



on the field trip. The close involvement of many Catchment Authorities with such areas will help us understand both sides of any discussion concerning the environmental aspects of limited scale logging.

### REDUCING ENVIRONMENTAL DAMAGE FROM LIMITED SCALE LOGGING

Attention to these matters would in many cases benefit the industry generally.

1. There is a need firstly for a greater awareness of the fact that limited scale logging is special and distinct aspect of the logging industry generally, and must be treated as such.
2. There is a need for lateral thinking on the part of the industry in relation to methods and equipment used in limited scale logging. There appears to be a degree of inertia within the industry towards doing anything other than tinker with existing methods, i.e. the hauler, skidder and tractor operations developed mainly for large scale clearfelling operations.

For example, there could well be environmental benefits gained from taking the mill to the wood, rather than vice versa, and an example of this will be seen on the field trip.

The potential for logging to damage soil and water values must be recognised when planning establishment of a site. This should be a factor in making choice of species, and choice of silvicultural regime. It may be a factor in deciding whether or not to plant the site at all. A few specific points include :

- (i) The choice of a longer rotation species in order to lessen the frequency of logging. Higher value species may enable a profit to be made from careful and more expensive logging of some sites which would otherwise be uneconomic; a smallwood regime may allow a return from a site on which extraction of large logs would cause damage.
  - (ii) At the tactical level, logging plans should be prepared for each site, taking into account environmental requirements. Realistic production targets for logging crews must be set, allowing them the time to log a site carefully; and supervision must be thorough in order that a contractor or machine operator is not able to make maverick on-site decisions which destroy the best of intentions.
4. There needs to be more research on the effect of various logging techniques on water and soil values. This research should be done in co-operation with the logging industry, not in an adversary situation. The research should be targeted specifically at limited scale logging, and should be aimed at making practical recommendations for changes of

a type that the industry is technically and economically capable of achieving.

5. The Catchment Authorities must give the industry the guidelines and clear direction they wish to see followed. This is not to say environmental considerations must be paramount, rather that a balanced appraisal of economic criteria, technology, and water and soil values must be undertaken when considering small scale logging operations. To achieve this Catchment Authority staff need an understanding of the constraints under which commercial forest operates. Similarly, forest managers and planners, and logging staff and contractors must be made aware that the concerns of Catchment Authorities are real, and will not go away if ignored.

### SUMMARY

Sites which cannot be logged by existing methods for either technical or environmental reasons are widespread. The interest of Catchment Authorities in the logging of such sites is something that the industry must accept, as it is real, and will not go away. The onus is on the industry to develop the methods and skills required to safely log such areas. It may be that extra costs will be incurred in so doing, and it may be that consequently some sites will never be logged. More common perhaps is the likelihood that profits from such sites will be reduced rather than be non-existent.

It is in the interest of the logging industry to develop environmentally sound means of logging these difficult sites. Perhaps if the extra costs of using such methods can be identified, then the IRD may acknowledge this as a deductible cost just as diesel and wages are. An extension of the current user pays philosophy being promoted in New Zealand may provide another incentive for the industry to make these changes - you might be asked to pay for the Catchment Authority to be involved in your logging operations!

### PROTECTION PLANNING

W.V.A. has assisted in the establishment of approximately 2500 hectares of forest by way of advancing grant monies to landowners for soil conservation plantings. The estimated species breakdown is :

P. radiata	1500
D. fir	300
Larch	100
Eucalyptus	100
Poplar/willow	300
Misc minor species	200

These blocks are typically less than 10 ha in size, and are dispersed over a large number of farm properties. Most of the properties concerned are in the volcanic plateau, and on-farm access is not generally a major restraint.



The primary objectives of the plantings are soil stability, catchment protection and water quality enhancement, and although the trees are in private ownership the Authority retains control over maintenance and harvesting by way of a Land Improvement Agreement registered upon title.

It is important to appreciate that the plantings generally have done their job by reducing soil loss by gully erosion and any return from timber is incidental to the exercise. However, a pragmatic attitude must be taken, as landowners and log purchasers can see revenue in standing trees irrespective of the site generally.

The crunch is that removal of trees from sensitive sites must be planned so as to incorporate a high level of protection for the site. In most of the early plantings little thought was given to logging the sites. At the time erosion was severe, and halting it took priority over all other factors. Similarly, silvicultural treatment of the early standards was insufficient or non-existent. W.V.A. staff are now aware of the problems these features will cause, and attitudes are now somewhat different. Silviculture is now universally advocated, both for stand health and to increase the timber value of the trees. The use of species other than Pinus radiata is more widespread, in spite of greater difficulty in establishment. This is in order to extend the period between logging activity on these sites, and with the aim of providing a higher value product to accommodate higher extraction costs. Where the sites are particularly difficult, species which are unlikely to be attractive to anyone for extraction are now considered. Pre-plant assessment of logging factors is becoming routine.



*".... removal of trees from sensitive sites must be planned so as to incorporate a high level of protection for the site ...."*

(LIRA Photo L286/12)

