

WAKE UP VANCOUVER!



**AN HISTORICAL OUTLINE
OF THE POLICIES AND ADMINISTRATION,
INCLUDING SOME OF THE DEBATES,
CIRCUMSTANCES, AND CONTROVERSIES,
OF THE GREATER VANCOUVER WATERSHEDS**

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April 23, 1993**

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PREFACE

As a result of an article in Vancouver's Georgia Straight by Ben Parfitt, *The Lost Forest*, March 12-19, 1993 (see end of report, Newspaper Articles), the Greater Vancouver Library received enquiries from readers about *Wake Up Vancouver!*, a report mentioned in the article. *Wake Up Vancouver! : An Historical Outline of the Policies and Administration, Including Some of the Debates, Circumstances, and Controversies, of the Greater Vancouver Watersheds*, was finished on February 6, 1992, as an initial draft manuscript for research on what was shaping into a proposed book.

Somewhere around 1989 I was troubled to read that somebody was logging in our watersheds. As a life-long resident of Vancouver I must have somehow imagined, quite naively, that our municipal governments had always protected the watersheds from industry. I suppose I thought that because the watersheds were restricted from public access. Years ago I remembered wandering along the North Shore forests and coming across signs saying so. And I suppose if I had lived somewhere near the routes which the logging trucks had exited along the many years I would have thought otherwise. Such was not the case.

Near the end of May, 1991, two related and important events occurred. Ralf Kelman, tree-searcher (T-Research), introduced me to some of the "unmanaged" old growth forest on the western slopes of the Seymour Demonstration Forest area, near Hydraulic Creek, seen on the front cover of this draft (an area which no more than two months ago was proposed to be logged, but was wisely cancelled by the Water Committee). A few days later I began to dabble into the history and present circumstances of the Capilano, Seymour, and Coquitlam watersheds, after a visit to the Vancouver Public Library where I perused through a copy of the *Draft Summary Report* written for the Greater Vancouver Water District (GVWD) in January 1991. I became suspicious and curious about seemingly biased and very brief historical remarks in the report. Over the course of many months following, visiting libraries and archives, I had unraveled the essentials for understanding the circumstances behind the clearcut logging agenda in our watersheds. In light of that research it became apparent to me that there was only a negligible measure of accuracy of this history and its context, not only in the *Draft Summary Report*, but also in the written presentations to the Water Committee on May 2nd and 3rd of 1991 (see Appendix C).

Near the end of 1991 the pseudo-policy of logging in the watersheds was taking some very interesting turns. Members of the Greater Vancouver Water District (GVWD) Administration Board Council were in the midst of passing a final motion to place a moratorium on logging, a motion which was mysteriously redirected after the sudden intervention of a contingent which strongly advocated a continued logging program. By early January of 1992, I decided against sending a five page letter to the previous Chairman of the Water Committee, Richmond Mayor Halsey-Brandt, with brief and important details of my research, but instead I expanded the letter into a much larger and informative document. In the space of a month I rushed to produce a report and personally financed 37 copies. I decided to inform our public representatives and delivered copies to the Greater Vancouver Water District, my M.L.A, Tom Perry, Vancouver Mayor Gordon Campbell, and the mayors of West and North Vancouver, Richmond, and Ladner areas, some Aldermen, reporters, and sold a few at cost to interested parties. When I finished the report I did not include a cover letter to explain the circumstances, nor did I include copyright information.

On February 26, 1992, the Vancouver Sun published an OpEd piece which I wrote on the history of the watersheds (see end of report), just two days before a very important vote on the continuation of logging in the three watersheds, the closest vote on record since the early 1960's. But unfortunately

more of our unique heritage, namely, the old-growth forest sites in the East Capilano Creek, was to be clearcut. Since that time *Forest Planning Canada*, a community forestry magazine, published excerpts from my report (September/ October 1992, volume 8, number 5, pages 20 - 35.)

Coincidental to my writing the original report, I was unaware that there were two similar reports published in December 1991 on the history and policy of Victoria's municipal watersheds. *The GVWD: A House of Cards? A Critical Review of Logging Activity in Victoria's Municipal Watershed 1924 - 1991*, by Mehdi Najari, and *The Case for Changing the Management Perspective - A Review of Forest Policy and Planning of the Greater Victoria Water Supply Area 1924-1991*, by O.R. Travers, R.P.F., were funded by the Victoria Branch of the Sierra Club of Western Canada (see Appendix B).

In cooperation with the Greater Vancouver Library I wanted to make my 113 page report available to the wider public. In retrospect, I realized that because the original report was written and designed hastily - compressed with all sorts of unrefined and sometimes awkward information, with un-credited sources, photos, and graphics - I decided to make a number of changes and additions.

I wish to thank the staff of the Greater Vancouver Water District Watershed Management Department for putting up with me and for kindly providing materials and information; staff members of the GVRD Engineering Department; and particularly Frances Christopherson at the GVRD library. I also want to thank the Main Branch of the Greater Vancouver Public Library, the staff at the Vancouver Archives, the North Vancouver Archives, the U.B.C. Main Library and Special Collections, the U.B.C. MacMillan Library, and the staff at the Provincial Archives in Victoria, and many more people over the course of almost two years so far who have helped to shape this draft. My thanks to Leah, who indirectly influenced me to rewrite this draft.

I sincerely hope that this initial manuscript will help the public to foster an understanding of the history, policy, and controversies of the Greater Vancouver Watersheds, most of which has been forgotten, unpublished, distorted, and sometimes hidden from the general public.

April 26, 1993. W.K.

[**Note:** The conversion of this old manuscript, to a pdf format, was finished on April 1, 2007. Despite the overshadowing temptation to alter the original script, because of the wealth of information and knowledge that has transpired since the publication in April 1993, now 14 years past, I have kept to the original script, with only a few alterations and corrections. I have also included a few additional photographs.

Readers should know that the Seymour Demonstration Forest, and its advisory committee, is no longer in existence. The lower Seymour off-catchment lands are now dedicated as a "conservation reserve". The Greater Vancouver watersheds are now re-protected (as of November 10, 1999). Some readers will undoubtedly find the comments at the end of the report by numerous professional foresters, the excerpts from the May 1991 written submissions to the Greater Vancouver Water District hearings in Appendix C, bizarre and interesting. I certainly did, in reading through it again.

This was a self-published and self-funded report, and many copies were provided to local politicians, the media, and to libraries upon its release. It became an important catalyst for future research and musings for the author.

For a more up-to-date, concise summary of relevant events, see the first two chapters of *Silty Sources* (November 1999) available on the BC Tap Water Alliance website, and in the Greater Vancouver Public Library. There is a need to publish a proper and accurate record on the history and politics of the Greater Vancouver watersheds.]

OPENING QUOTATIONS

Every major poet demands from his critic a combination of direction and perspective, of intensive and extensive reading. The critic must know his poet's text to the point of possession....

(Northrop Frye, *Fearful Symmetry*.)

The District's policy is to preserve all the timber both commercially loggable and otherwise in the watersheds for the conservation of the run-off and to preserve the area from human occupation either temporary or permanent. I would not attempt to set a value on the watershed lands in the Coquitlam, Seymour, and Capilano watersheds as they constitute an almost invaluable asset of the District permitting the complete and entire control of the purity of the water supply for all time so that neither now nor in the future will filtration or sterilization of the water be required.

The District is as completely protected as the laws of the Province will permit in the enjoyment of what amounts to exclusive rights to all the water.

(E.A. Cleveland, Greater Vancouver Water District Commissioner, correspondence, November 30, 1936.)

The theory of multiple-use ... can be used to mask flagrant abuse of natural resources and often is the antithesis of conservation, which is concerned with the maintenance of delicate and intricate relationships which exist between resources.

Currently the term multiple-use often is used in a glib sort of way to cover up forms of land abuse being carried out in the name of what passes for land use. In that respect, I would then liken the license taken with the multiple-use theory to the employment, or rather, the misemployment, of the respected term "conservation" which has been used many times to screen speculative or dishonest manipulation of land or water or of the resources that arise from them. In the great majority of instances, when we regard examples of so-called multiple-use, we are really viewing single-use accompanied by multiple-use in greater or lesser degree.

(D.B. Turner, Director of Conservation, B.C. Lands Service, from his paper at the annual meeting of the Canadian Institute of Forestry, October 11-13, 1951, the conference theme on "Multiple Use of Wild Lands.")

There are over 80 community watersheds in B.C. that are also an important source of timber to the forest industry.... The GVWD watersheds, like all watersheds in the province, must be considered within the context of an overall Land Use Strategy.... we cannot afford single-use designations, especially when, in the case of the GVWD watersheds, all information points to the need for integrated use of the forested land.

(B.W. McCloy, Council of Forest Industries, submission #46.)

The poor payer of water rates is not organized so God help him against the timber interests lobby.

(William ("Bill") Angus, Greater Vancouver Watershed Inspector, 1953.)

The Sunshine Coast regional district is suing B.C.'s ministry of forests over damage caused by faulty logging roads in the watersheds that provide the area's drinking water.

If the turbidity problem is not addressed at source it's only a matter of time before we're in a crisis situation," said public utilities committee chairman Jim Gurney.

Gurney said the ministry knew about damage to Chapman and Gray Creeks 27 years ago when it conducted studies of failing logging-road banks in the region.

In a statement of claim filed last month in B.C. Supreme Court, the regional district alleges "logging and logging-related activities have and continue to cause deterioration to the water quality in the creeks and watershed areas."

(Vancouver Sun, August 3, 1991, page H1.)

50% of the community drinking water systems, serving 85% of B.C.'s population, only the Greater Vancouver Water District has control of access to its watershed, in the rest of B.C. multiple use of watersheds is practiced. This can include mining, logging, road construction, animal grazing, installation of energy transmission lines and their right of way, hunting, fishing, camping and boating. Now at present the control of watershed usage rests with the Ministry of Forests in cooperation with the Ministry of Environment.

This situation exists even if the multiple uses may be having an adverse impact on the quality of drinking water.

B.C. has gained the dubious distinction of having the highest incidence of water borne diseases in Canada. [87% of the population's water supply in B.C. is from surface water; 13% is from groundwater. In 1989, water borne diseases were 50% higher than the Canadian average.] In community after community in the province people have become ill from harmful bacteria and parasites found in community water systems.

(Presented to the Members of the Legislative Assembly in Victoria, B.C., August 1991, from the B.C. Branch of the Canadian Institute of Public Health Inspectors, DRINKING WATER QUALITY IN COMMUNITY WATER SYSTEMS: Section C - Watershed Use and Management.)

I believe that neither the rationale for timber harvesting nor the assertion that timber harvesting does not adversely affect water quality can be supported scientifically.

Thousands of years of natural evolution have given us the old-growth forests of the watersheds which generally do an excellent job of giving us high quality water. I subscribe to the idea that, "if it ain't broke don't fix it."

(Michael Feller, Associate Professor, Faculty of Forestry, U.B.C., submission #57, April 22, 1991.)

A decorative horizontal line with a central floral ornament. Below the line is a scale in miles, with markings for 1/2, 1, 2, 3, 4, and 5.



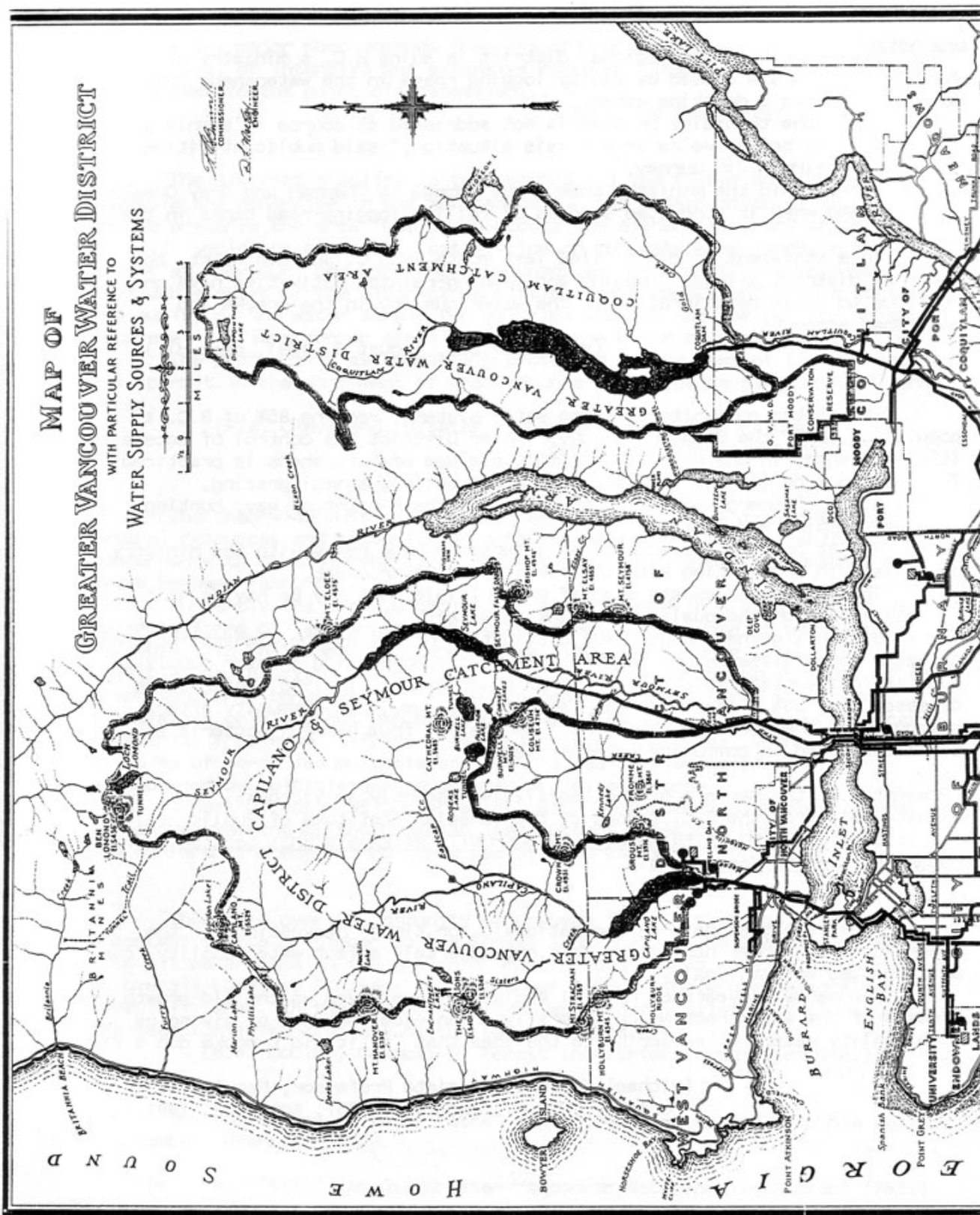
 F. J. [illegible]

 COMMISSIONER



 D. L. [illegible]

 ENGINEER





1. INTRODUCTION

*The spring purified itself a bit as it came down from the mountains, but it always carried with it a faint tang of mushrooms, earth dead leaves, pine needles, mud and snow, on its way down to the inlet out to the Pacific. (Malcolm Lowry, *The Forest Path to the Spring*)*

During the latter half of the 1800's and the early 1900's the temperate old-growth rainforests of the lower Fraser Valley and the surrounding valleys and mountains were mined for local and international markets. These forests were the ancient forests, forests which since the great ice ages saw very little human interference. This was the final era of the ancient giants, the colossals. The forests, for the most part, were allowed to flourish through natural "unmanaged" processes and all the plants and creatures along with them.

Indeed, not long ago, the Indian Nations, in great numbers, with their rich cultures and languages, didn't exploit the forests of British Columbia and Washington State, a borderless region. As part of their worldview the Indian peoples understood that the forests, as all things in the world, were the handiwork of the Creator, and as such were to be treated with reverence and respect. That's why the European timber barons and industrialists were able to exploit and plunder what they did in what is now designated as British Columbia - the multinationals and other big companies are still busy marshalling the arborcide.

As time elapsed the colonial governments began selling and leasing large tracts of land for resource "management". As such, these decisions were made for big and small business ventures, while trampling the Indian Nations underfoot. And as a result most of the magnificent low elevation forests of southwestern British Columbia were cut, sold, and abandoned for self-regeneration. The rate of this cutting depended upon a number of factors, such as who was doing the cutting and the evolving technology. But things weren't always quite that straight forward, and at times the exploitive industrial mentality was held at bay. And one of the areas in which this occurred was in the water supply drainages of the Capilano, Lynn, Seymour, and Coquitlam.

The truth is that British Columbia is largely living on its timber capital, and even those whose business it should be to tell the truth as they know it, refuse to recognize as a fact what is beyond all disinterested controversy.

It was at any time possible for us to supply the railroad with twelve or fourteen inch timber forty and even sixty feet long for trestle bridges.... Nowadays how many mills can supply such lumber.

And who tells British Columbia that every fire-ravaged and every logged area bids for more fires? Many cause lightning. They forget that in the old days there were thunderstorms and the ancient forests, by keeping the ground moist, forbade the extension of any fire begun by lightning.

As soon as anyone offers an aesthetic reason for tree preservation there is a loud and contemptuous yell. But would not a logging company roar with laughter at a board meeting to hear that alleged as a reason for not making the greatest natural monuments of the country into shingles? How can one stand by a pine tree (Douglas Fir) that first sprang up when Queen Elizabeth ruled England and not be impressed. But a fool sets a fire going and greater glories than the burnt Temple of Ephesus fall into ashes. And what fools spare the gods of trade destroy. Now by the natural passage of time, those who knew what the forests were once have mostly died or at least sit afar off, as they rest. They cannot remonstrate. And the present generation has grown up in continual contact with the slaughter yard. They think of the present and cannot look forward. And if I am truly one of those poor fools who feel that an ancient forest is something far more sacred than a cathedral and more inspiring than any work of man I am content to remain such a monument of folly.

(Morley Roberts, *On The Old Trail - Through British Columbia After Forty years*, 1927)



Early loggers falling a Douglas-Fir snag 13 feet/4 metres in diameter in Lynn Valley (1908).
Courtesy of Randy Stoltmann and the Lynn Canyon Ecology Centre.

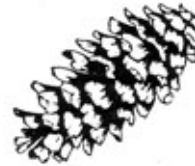


Greater Vancouver Water District log sort, March 1993. The now rarer low to mid-elevation, old-growth Douglas Fir. Butt end approximately 24 feet in circumference, 9 foot diameter.
Logs taken from logging operations in Capilano watershed. Photo: self-portrait.

2. MEDICAL HEALTH OFFICERS AND THE WATER RIGHTS DEPARTMENT

The Lynn creek disturbance has been, and is, a very live question in North Vancouver city and district, enough solutions are offered by local sages to make an ordinary hydrognostic turn pale, and far too numerous to embody in an ordinary report.

(Frank DeGrey, Chief Sanitary Inspector, October 21, 1917)



Medical Health Officers in the state of Washington and in British Columbia began a strict and comprehensive monitoring system in water supply catchments by the turn of the century. On March 13, 1899, Washington State passed a law to safeguard domestic water supply sources and “Special Police” were assigned to enforce the regulations.

That for the purpose of protecting the water furnished to the inhabitants of towns and cities within the state from pollution, the said towns and cities are hereby given jurisdiction over all property occupied by the works, reservoirs, systems, springs, branches and pipes, by means of which, and of all the lakes, rivers, springs, streams, creeks or tributaries constituting the sources of supply from which such cities or towns or the companies or individuals furnishing water to the inhabitants of such cities or towns obtain their supply of water, or store or conduct the same, and over all property acquired for any of the foregoing works or purposes or for the preservation and protection of the purity of the water supply, and over all property within the areas draining into the lakes, rivers, springs, streams, creeks or tributaries constituting such sources of supply whether the same, or any thereof, be within the corporate limits of such town or city or outside thereof;...

In conjunction with the State’s Health Department, Health Officers were monitoring the Cedar Creek watershed and were concerned over any deleterious substances entering water supplies due to natural and human intervention. This included problems from soil erosion and debris, to water run-off, to human and agricultural waste.

By February of 1909 another Act was passed in Washington State which empowered a municipal corporation to acquire any and all alienated lands which might affect their water supply:

An Act to empower municipal corporations of other states to acquire title to lands and water rights within the State of Washington by purchase or condemnation for the purpose of securing or protecting their water supply and to prevent the pollution of such water supply, and prescribing penalties for the violation of the provisions of this Act, and declaring an emergency.

SEATTLE SELLS TIMBER

City Disposes of Trees Along Cedar River Watershed.

Seattle, Aug. 29.—The sale by the city of Seattle of approximately four hundred million feet of standing timber in the Cedar River Watershed, most of it contiguous to Cedar Lake, to the Pacific States Lumber Company for a consideration of more than \$1,000,000 has been authorized by the City Council.

Under the terms of the sale the lumber company agrees to remove the timber at the rate of 50,000,000 feet a year.

Unfortunately for the city of Seattle, the forest industry gained access and control over their water supply, the Cedar River, by 1917. Clearcutting and road building of their vast old-growth forest was to haunt the Seattle Water District in years ahead, and oddly enough it was during this same period that the watersheds of Greater Vancouver began to experience similar problems.

(Left: Excerpt from Vancouver Province Newspaper, August 29, 1917)

The British Columbia Provincial Board of Health had appointed Medical Health Officers to monitor public water supply standards for Vancouver and its surrounding municipalities. In December of 1915 a report was sent to the Comptroller of Water Rights signed by various Medical Health Officers to immediately investigate the matter of future logging proposals in Vancouver's watersheds, the Capilano, Lynn, and Seymour. By 1916 there was serious and growing concern in local municipalities over the future logging in their water supply areas. F.T. Underhill, Vancouver's Medical Health Officer, wrote to the B.C. Government in June:

I have been instructed by the City Council to write you with regard to the Watershed on Seymour Creek.

We ask that our Watershed might be protected by the Provincial Government, to prevent the removal of timber and also from any possible source of contamination by the erection of logging or shingle camps.

The Provincial Water Rights Branch investigated the matter by conducting an assessment of the situation in the watersheds of the Seymour, Lynn, and Capilano. In an eleven page assessment of August 1916 it was concluded that:

... no logging operations on the watershed above the intake can ever be carried on without imminent danger of pollution. Loggers would not be concentrated during the day in one camp but scattered throughout the timber, and no sanitary regulations and inspection could be relied upon to ensure that no drainage from fecal matter reached the stream. (p.2)

Aside from the question of pollution during logging, it would materially detract from the value of the Seymour Creek as a water supply to allow the watershed to be deforested.

Should the timber be removed and the unchecked erosion would not only increase the amount of suspended matter in the stream but would materially reduce the time of concentration, by eliminating the retention of run off which the timber effects. Seymour Creek in its present state is subject to wide and quick fluctuations.

Any logging would tend to still further reduce the minimum flow and correspondingly increase the amount of the flood. (p.3)

The City, as far as I could ascertain, owns comparatively little land above the intakes; but for a distance of some twelve miles upwards the bottom of the valley is covered by a strip of Crown granted lots or timber licenses varying from one to two miles wide. Realizing that sooner or later some definite policy would have to be adopted, in 1913 the City engaged Mr. Eustace Smith to make a valuation of the timber on certain lots and licenses.... The Forestry Department also had the same territory cruised with different results; and also extended the investigation to take in other licenses which were covered in a separate report. (p.3-4.)

Whatever means be adopted by the Provincial Board of Health to prohibit any logging operations on the watershed, it is manifest that sooner or later the City will be confronted by the necessity of purchasing all alienated land and timber. (p.8)

It should be borne in mind that any improvement of the Seymour Creek watershed by purchase or otherwise should properly be shared by the other Municipalities which use the water. A joint Board to control the water supply of the Burrard Peninsula and North Vancouver is of course the logical method of handling the subject, but such a development has yet to be initiated. (p.9-10)

It must be remembered that any policy adopted with regard to the Seymour Creek timber must presumably be also applied to that on Capilano Creek which was alienated prior to the enactment of the reserve there on April 6, 1905. (p.11)

CONCLUSION: From a standpoint of public health it is essential that no logging be allowed on the watersheds of Seymour and Capilano Creeks. Any prohibition of such logging on any one lot will undoubtedly bring up the matter of the acquisition by the City and its allied Municipalities of all alienated timber above the intakes.

Preliminary to this assessment, as referred to above, the Provincial Department of Lands' Water Rights Branch conducted surveys on the Seymour, Lynn, and Capilano watersheds from 1913 to 1915. The survey crew studied the major tributaries in each watershed, set up precipitation stations at all the waterworks intakes, and provided an accompanying map with the final report. In the 1914 report they state:

The Seymour River is without doubt the most important stream to be considered in connection with the water-supply for a Greater Vancouver of the future [because of it's near pristine state]. It is a swift mountain stream of excellent, clear, pure water, and affords storage possibilities which, developed, would assure Greater Vancouver an almost unlimited supply of water for long periods of exceptional drought....As indicated in the accompanying photographs, practically the whole catchment-area is well covered with timber and a heavy growth of berry-bushes. Fire has not yet touched the forest on the watershed above the city's intake....The preservation of the forest-growth to the watershed is necessary for several well-known reasons, some of the more important being:

(1) That the tall trees retard very materially the spring melting of the snow; (2) that the forest and ground vegetation maintains a normally low temperature in summer, preventing excessive evaporation and keeping the ground well saturated with water; and (3) that the forest-growth prevents erosion and quick run-off on steep slopes. Where timber is removed the soil is very quickly washed off, leaving bare mountain-sides off which the precipitation rushes almost as it falls; causing sudden dangerous floods laden with great quantities of sand, gravel, and organic matter, rendering water unsatisfactory for domestic purposes. Moreover aside from the flood dangers and turbulent water, perhaps the most serious result is the quick dissipation of the run-off.... Evaporation over the watershed is very slight on account of a comparatively low temperature. The thick growth of forest and brush affords the ground-moisture excellent protection.

In the 1916 Department of Lands report the investigator wrote:

As referred to in our report of 1913, the importance of retaining the timber on this particular watershed cannot be too greatly emphasized. In many places there are signs of freshet streams where the sub-surface is seen to be nothing but a mass of boulders. At the sides of these courses can be seen the shallow depth of surface soil, bound, as it were, into a mat by the roots of the timber, which, if allowed to be cleared off, would case the formation in many places to wash down, leaving nothing but the sub-surface of boulders. The timer fulfils the purpose of regulating the run-off, a factor to be considered by the municipalities which hold the water rights on the creek.



Health inspectors at the Capilano Waterworks station. Left to right: Dr. F.T. Underhill, Frank S. DeGray (Provincial Health Inspector), F.L. Fellowes (City Engineer), E.M. LeFluffy, James Kendric. Courtesy of Vancouver City Archives photo collection, Volume 39, City Department, page 28. Photo inscribed date: August 31, 1922.

Because of the imminent prospect of logging operations in the Seymour and Lynn watersheds for 1917, and in the Capilano for 1918, Medical Health Officers drafted the first health regulations in British Columbia for human access and logging in areas which would directly impact the city's water supply. In a letter from F.T. Underhill in October 1916, Vancouver's chief Medical Health Officer, to the provincial director, Dr. Young, he states:

I was instructed by the City Council to draft out the enclosed regulations for the protection of our watersheds from pollution and contamination. I fully realize that any regulations that may be adopted by the City must be sanctioned by yourself - in fact we have no authority to carry out regulations - this being in the jurisdiction of the Government. I know we both agree as to the seriousness of the situation that is likely to develop in all our watersheds, and how very necessary it is for us to preserve our present pure water supply for the use of the public.

Regarding the legality of timber leases and private holdings in the watersheds, Dr. Young wrote in February of 1917:

The City did not at the time of reservation being placed on unoccupied Crown lands come to any arrangement with the holders of the alienated lands, and the matter has been allowed to drift until now, and the holders of these lands are desirous of proceeding with the exploitation of the timber which they have a perfect right to do.

As the matter stands should logging operations be proceeded with and further protests be entered by these municipalities, the Board of Health has no other recourse than to declare that such operations will cause pollution of the water supply, in which event it is the opinion of the Board of Health that the matter should be one of adjudication as between the municipalities and the holders of the timber licenses.

In September 1917 the Chief Sanitary Inspector, Frank Degrey, wrote instructions to his new inspector J.J. Bryan for the Lynn watershed, to notify him of his new office and obligations.

In engaging your services as resident sanitary inspector for that portion of the Lynn valley watershed about to be logged by a company known as Cedars Limited, I deem it my duty to say that non-with-standing the fact that through departmental stipulation and regulations your food shelter and salary will be furnished by the Cedars Ltd, you are not for one moment to consider yourself under any obligation to that company. The slightest deviation from your duty to favour or in any way excuse the company or its employee's for any negligence or any act endangering the purity of Lynn Creek will mean dismissal. Your business is to see that the operations of the company do not in any way directly or indirectly pollute or contaminate any stream in Lynn valley in such a way as to affect the water of Lynn Creek, furthermore, you must demand the immediate dismissal of any employee guilty of an insanitary act on the ground. You have a copy of the regulations drafted for this piece of work these regulations will be a guide for you, but you will see that I have for many sanitary restrictions not enumerated in the regulations.

Until the constructive period is over I shall endeavour to be on the ground almost daily to give whatever help is needed. Again let me emphasize that in the prevention of pollution of Lynn valley watershed you must spare no individual company or corporation, taking your orders solely from the Provincial Board of Health.

Because of the logging that was proceeding in the Lynn drainage, the North Shore City Council was recommended by its City Engineer Clucas to install a water filter if the logging operations were

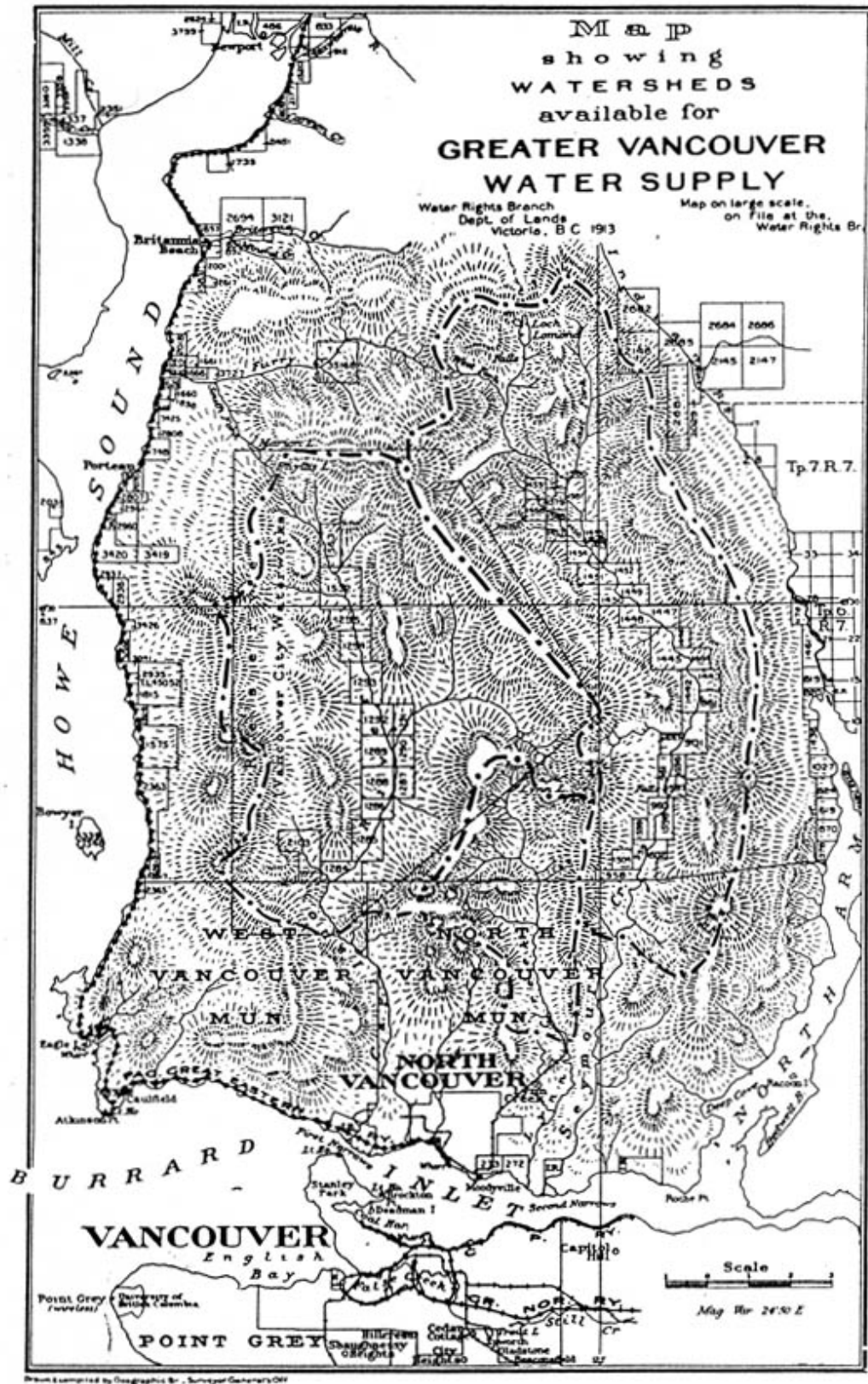
continued in 1918. The estimated cost for the new filtration system was somewhere between \$100,000 and \$150,000, and Clucas advised that it was cheaper to purchase the timber rights.

On March 30, 1917, the Vancouver Province newspaper published a letter from F.L. Fellowes, Vancouver's City Engineer [Fellowes had published the first report on filtration in Canada at the turn of the century after investigating many filtration schemes in eastern Canadian cities. He also investigated water supplies of many cities in the northeastern sector of the United States]:

We want to deal fairly by the private owners of timber on Capilano but our water supply is of greater importance than any private interests can be. It was in 1891, not in 1901, as has been stated, that the first alienation of timber on Capilano took place and that was three years after the city had begun to take water from the creek. During all that time the government has been a partner with the timber owners by collecting rentals and dues from them. It is therefore the duty of the government to take such steps as will save the city from any risk to the purity of the water supply. Those people who have put their money into the timber are entitled to protection and so are the people of the municipalities using Capilano water, which number over half the population of the province. Their interest expressed in terms of an investment represents \$200,000,000, one of the chief assets of which is an abundant, pure water supply. When a comparison of the money values of the interests involved is made that is a fact which should not be lost sight of.

Today it looks like a heavy task for Vancouver to undertake to secure control, but the object is worth it. No private interests should be left above the intakes of the water supplies, because no matter how valuable those interests may be, those of the public in the water supply are paramount. Within the next decade half a million people will be drawing their water from these creeks, and it will be a great asset to them to have an assured freedom from typhoid, and water of such quality and purity as we now possess.

It is important for the reader to consider two very important matters of precedence at this point. Firstly, the medical health profession under the Provincial Health Department, along with the Water Rights Branch, intelligently maintained the importance of a non-polluted and un-tampered water supply for the population's consumption. Secondly, it was understood some eighty years ago that clearcut logging and roadbuilding directly contributed to sedimentation loading of waterways and erosion of watersheds, by altering slope and water run-off characteristics, and influencing snow pack levels. In this regard the reader should keep in mind that the logging industry and the corresponding governmental ministry began to counter these professional conclusions from this time onward to the present day.



1913 Water Rights Branch map showing Capilano and Seymour watersheds. The Coquitlam watershed was dedicated for New Westminister City and its neighbour municipalities.



3. THE CAPILANO TIMBER COMPANY



Torrential rains yesterday and today have caused a sudden rise in both Seymour and Capilano creeks and should the heavy downpour continue fear is expressed that a repetition of the washout of 1921 may occur.... E.M. LeFlufy, waterworks engineer, stated this morning that a considerable amount of protection work was done on both creeks during the summer and that the city water mains should be able to withstand anything but the most unusually intense rains. "The sudden rise noticed in the Capilano last night was no doubt due to the logging operations in the higher reaches of the valley," said Mr. LeFlufy. "Knowing the way the river used to act we are in a position to judge the effect of the removal of trees. The water rushes down the bare side-hills filling up the creek much more rapidly than formerly."

(Vancouver Sun, September 22, 1924)

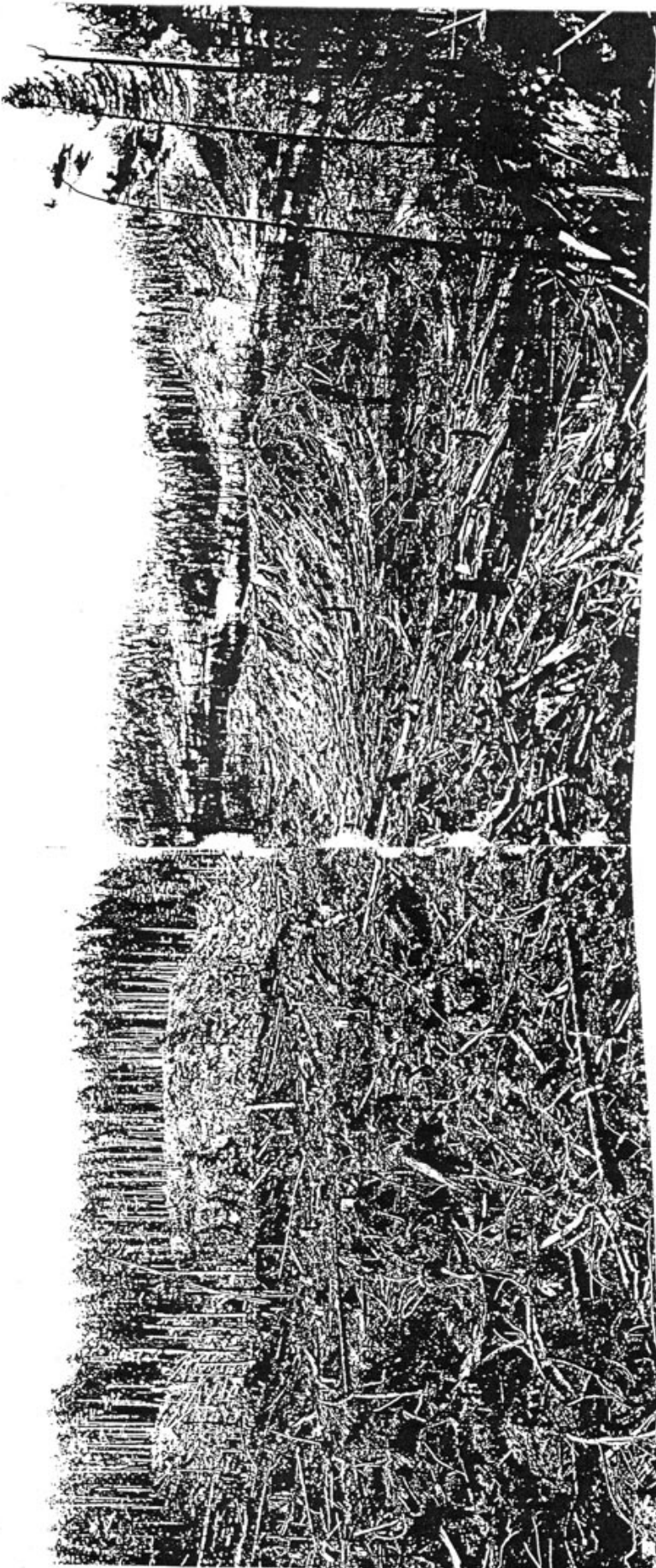
The logging operations in the Lynn and Seymour were minor compared to those of the Capilano. The Capilano Timber Co. obtained most of its timber leases on District Lots in the Capilano watershed back before 1906. At that time the Seattle-based firm decided not to log its leases, even though they were inventoried as having superior quality trees for the markets. In Dr. James W. Morton's *Capilano - The Story of a River*, he quotes a Bellingham mill man in 1906 on the cedar in the Capilano: "The timber there leads me to believe that it contains the finest lot of cedar that I have ever set eyes upon in all my experience."

The Capilano Timber Co. notified the affected municipalities in late 1916 that they were planning to build a railway complex for their logging operations. After they began clearcut logging in 1918 the provincial government, municipal officials, Medical Health Officers, Watershed Inspectors, professional engineers, and many others became increasingly concerned and alarmed over the future of the Capilano watershed forest and related water supply. In fact it was this extensive logging operation which became the focus of the great battle for municipal control over all the watersheds, documented in hundreds of newspaper articles for many years.

For instance, H.M. Burwell, long time engineer (in whose honor city officials named a lake in the Seymour), who had completed many contracts for the Water District since the turn of the century, wrote the Mayor and Council of Vancouver on September 17, 1917.

The disastrous effects which will surely follow logging operations in the Capilano Watershed cannot be overlooked, and I would suggest that typewritten copies of these articles be made for the use of the Provincial Government in their consideration of this vexed question.

Burwell presented copies of five interesting articles from the Vancouver Daily Sun newspaper regarding the future of the Capilano: *Review of Capilano Watershed Situation* (April 17); *Hands Off the Capilano Watershed* (April 20); *Forests and Water Supply* (April 25); *Greater Vancouver Water Supply* (May 17); and *Capilano Again* (September 15).



Capilano Timber Co.
logging operations.
Photo from Cleveland's
1922 report to Minister
of Lands Pattullo.

One of the many characters in this period with the Water District was William Taylor, who was hired as the *Watershed Observer*. His job was to observe, photograph, and police the Capilano and Seymour watersheds. Taylor became familiar with the terrain like his own back yard, and hiked the mountainous slopes with their valleys and forests year round.

From observing the operations of the Capilano Timber Co. he wrote in his 1922 logbook/diary:

They are logging around (the) mouth of Sisters Creek chiefly for R. (Red) Cedar but they are taking everything in sight and using it for pulpwood. They are going to log the slopes clean up to 2,500 feet in places, average around 2,000 feet when they get through. The logged off areas will be cut up by roads, etc., which will divert and interfere with natural drainage. If fire comes after, the watershed might be years before it will reforest itself. [January]

City's Snow Observer

Is a Wonder On the Trail

HILL RANGER IN HIS TRAIL TOGS



—Staffers Collier Photos.

WILLIAM TAYLOR.

William Taylor Has Lonely Job Among the Mountains.

Keeps Record for Waterworks of Precipitation.

By WILL A. HANMER.

THERE is one civic employee above all others who deserves a kindly thought each time a water tap is turned in Vancouver households. He is William Taylor, "observer" for the waterworks department, tracker of mountain trails, and rain and snow gauge recorder over the entire Capilano and Seymour watershed areas. On hot summer days Taylor is tramping mountain grades, and when domestic Vancouver shivers by the fireside at winter's chill, Taylor is still tramping through the ice and snow in the North Shore hills. His job is to visit scores of gauges and record precipitations of moisture in all its forms, and without his records the City Hall waterworks officials would never be able to assure a sufficient water supply through the drought spells.

In his way Taylor is a genius. A veritable encyclopaedia of woods lore and trail education, a botanist of the first water, a lay-engineer whose practical vision has played an important part in the great waterworks scheme under consideration, and a perfect physical specimen, iron-thewed and muscled from the physical benefits of his occupation. Many a corpulent alderman in past years with nothing but his avoirdupois to carry has panted at Taylor's heels on the steep mountain trails, while the tracker with a 70-pound pack has frolicked ahead like a jackrabbit.

HAS MOUNTAIN HOME.

Miss Dyer, played by Daisy Probert, is peevish and complaining, and Mrs. Blair, taken by Amy Wilkinson, shrewish and domineering. Unfortunately Miss Wilkinson's delineation of Mrs. Blair was a trifle too genial. Miss Hazelwood's Merritt made an excellent Mrs. Mitchell, director of the home, and Maud Blacknell had the smaller part of Mrs. Fullerton, another inmate. The play was directed by Miss Gwendoline Moore.

Received orders to go up Capilano and get samples of water to ascertain what damage the logging company is doing especially in regard to polluting the water from clay banks they have cut into and made them drain directly into river. [February]

They have logged off base of side hill of all standing timber. Their spar trees stand at the foot of slopes which is near an angle of 30 degrees. The bench land is all logged off on east side of creek with no attempt made to burn the slash. If fire ever goes through this it is liable to burn out the intake and damage pipe line by trees falling across it. Crown Creek has still got considerable slash in it. The banks are logged clean and in places the clays and gravels are moving into creek bed. Another good flood will clear the creek out of slashings. [April]



Capilano Timber Co. operations. Above: Marion steam shovel collapse under its own weight in muck. Below: Exposed silt bank in preparation for railway track. Many operations were ruining water quality.



In October 1922 E.A. Cleveland, the provincial Comptroller of Water Rights and Consulting Engineer of the Provincial Lands Department, submitted a lengthy and detailed 113 page report on the Capilano and Seymour watersheds, *The Question of Joint Control of Water Supply to the Cities and Municipalities on Burrard Inlet*. The report was unwillingly commissioned by the provincial Minister of Lands, T.D. Pattullo, because of the number of continual protests and inter-Departmental pressure. Cleveland concluded that the future of the water supply for the growing population of Greater Vancouver was at risk from logging activities. On page 92 and 93 of the original report Cleveland made the following recommendations:

That the alienated timber in the watershed should be completely controlled by those responsible for the supply of water to the Cities and Districts concerned is beyond question. (Page 92)

The pre-eminent object to be attained is the maintenance of an adequate supply of pure (i.e. unpolluted) water - all other considerations are subordinate: and to that end the watershed should be preserved inviolate. (Page 93)



E.A. Cleveland

Cleveland was very concerned about the logging operations in the Capilano and commented on the Capilano Timber Co. in his report:

...it may be said that for sheer downright devastation of a timbered area the present methods of logging leave little to the imagination. The photographs of logging operations on the Capilano appearing herein attest this statement.

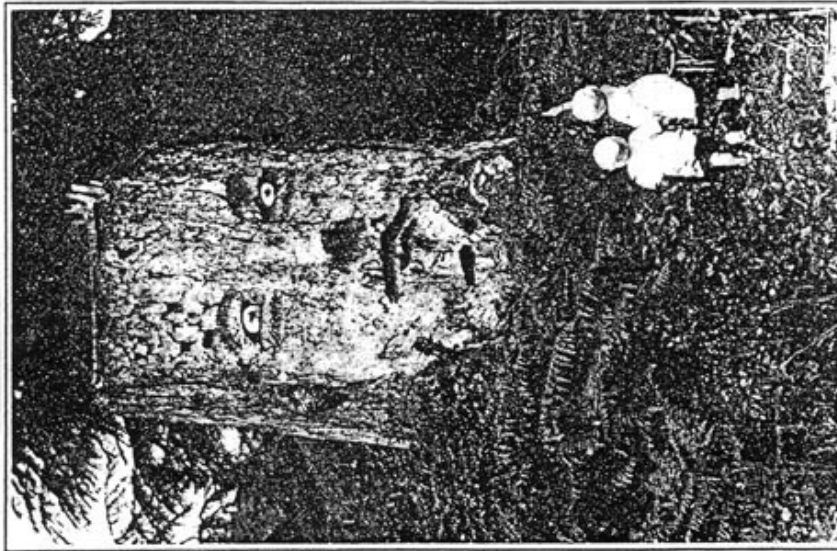
Essentially, Cleveland recommended that: no more land in the watershed catchments be leased by the provincial government for the purpose of timber extraction; that all logging operations eventually cease; that the leasees be financially compensated for the acquisition of said lands; and those lands be incorporated under the protection of a future Water Board. Though the report was submitted in 1922 it was not officially released to the public until 1926, with some additional hydrological charts. As mentioned earlier, Cleveland's report was corroborated by ongoing reports and investigations within his ministry nine years beforehand.

At the occasion of the 2nd British Empire Commonwealth Forestry conference in 1923 some members were given a tour of the logging operations of the Capilano Timber Co., much like today's propagandized visits to forest mining company operations. At the time the Capilano Timber Co. had a very large high lead operation, with some very tall and sturdy spar trees. They were the first company in Canada to log forests up to an elevation of 2000 feet. The particular group of people:

were greatly dismayed at the condition of the area and the mass of debris resulting from logging operations. The opinion was expressed at that time that the area would not regenerate.

Such was the lasting effect from the group's harsh criticism of the logging activities on that occasion that the B.C. Forest Service gave a tour thirty years later in 1953 to members of the 6th Commonwealth Forestry conference of the same area in order to clear the air regarding their concerns of regeneration.

Western Lumberman, 1925?



Odd stump at Capilano Logging Co. operation, which resembles a human head. Boys placed boulders in the nocks where the spring boards once rested. A great knot immediately between and a gash cut below to enable the lumberjacks to get up to their spring boards—and you have a remarkable likeness to a human face.

WATERSHED WAR IS LOOMING

CITY AND PATTULLO AT ODDS

VANCOUVER, B.C., THURSDAY, SEPTEMBER 10, 1925.

Mr. Woodward's Position

SINCE his election to the provincial legislature in June last Mr. Chas. Woodward has proved himself a strong and fearless advocate of public rights. His methods have been somewhat disconcerting to the average run of politicians, but no one doubts either the honesty of the man or the keen shrewdness with which he lays hold of fundamentals to the exclusion of minor matters.

There promises to be many heart-burnings before Mr. Woodward gets through with the task to which he has set his hands. And it is just possible that the heart-burnings will do good to those who suffer them. It is to be hoped so, in any event, for suffer them they will. But one thing is certain—either Mr. Woodward will accomplish much in righting wrongs or stupidities which have existed, or, failing that, the Liberal party in which he is so outstanding a factor will be severely hurt.

Mr. Woodward's strength lies in the absolute disinterestedness with which he approaches all questions. He sees the public and its welfare first. He sees the claims of the law-abiding group in its perpetual conflict with the criminal class. Above all he has his face set dead against all those who organize through vice to corrupt their fellowmen and women, and to gain pecuniary reward for themselves in doing so.

Mr. Woodward's first act was to interfere in connection with the police commission. He essayed a very difficult task, but he won out, because he named a man recognized at once as a good, trust-worthy and experienced citizen. The courage Mr. Woodward showed was backed by the wisdom of his selection, and before the combination opposition had to bend the knee.

Now Mr. Woodward has stepped out to protect the city's water supply. Again he has disturbed those accustomed to see things run along routine lines, but again he is certain to win because right and the interests of nearly half the people of the province are bound up in what he is doing.

All good citizens, irrespective of party, should be and are behind Mr. Woodward in the fight he is making. The Star is with him absolutely. It does not wish to be unfair to Mr. Pattullo, who, as a responsible minister, looks at the administration of his department from a business point of view and values, perhaps too highly, the revenue he can get from the Capilano timber; but it cannot agree with him. The first consideration, in so congested an area as the Greater Vancouver peninsula, promises to be, are the public health and safety beside these even millions paid into insignificance.

The Vancouver members have made a stand with Mr. Woodward and they, like him, have not the slightest intention of giving way. Vancouver's water supply must be protected, and the price for protection must be paid.

ULTIMATUM IS EXTENDED 1 DAY

Star Sept. 11/25
Following the passage of telegrams between Premier Oliver and Charles Woodward, Vancouver member, relative to the stand taken by the latter on the sale of timber on the Capilano watershed, Mr. Woodward has wired the premier extending the period of his ultimatum of September 9 for 24 hours. This will make Friday morning the time set for his resignation by Mr. Woodward in the event of his demands not being met, but he stated this morning that there would be no hair-splitting on time as far as a few hours were concerned.

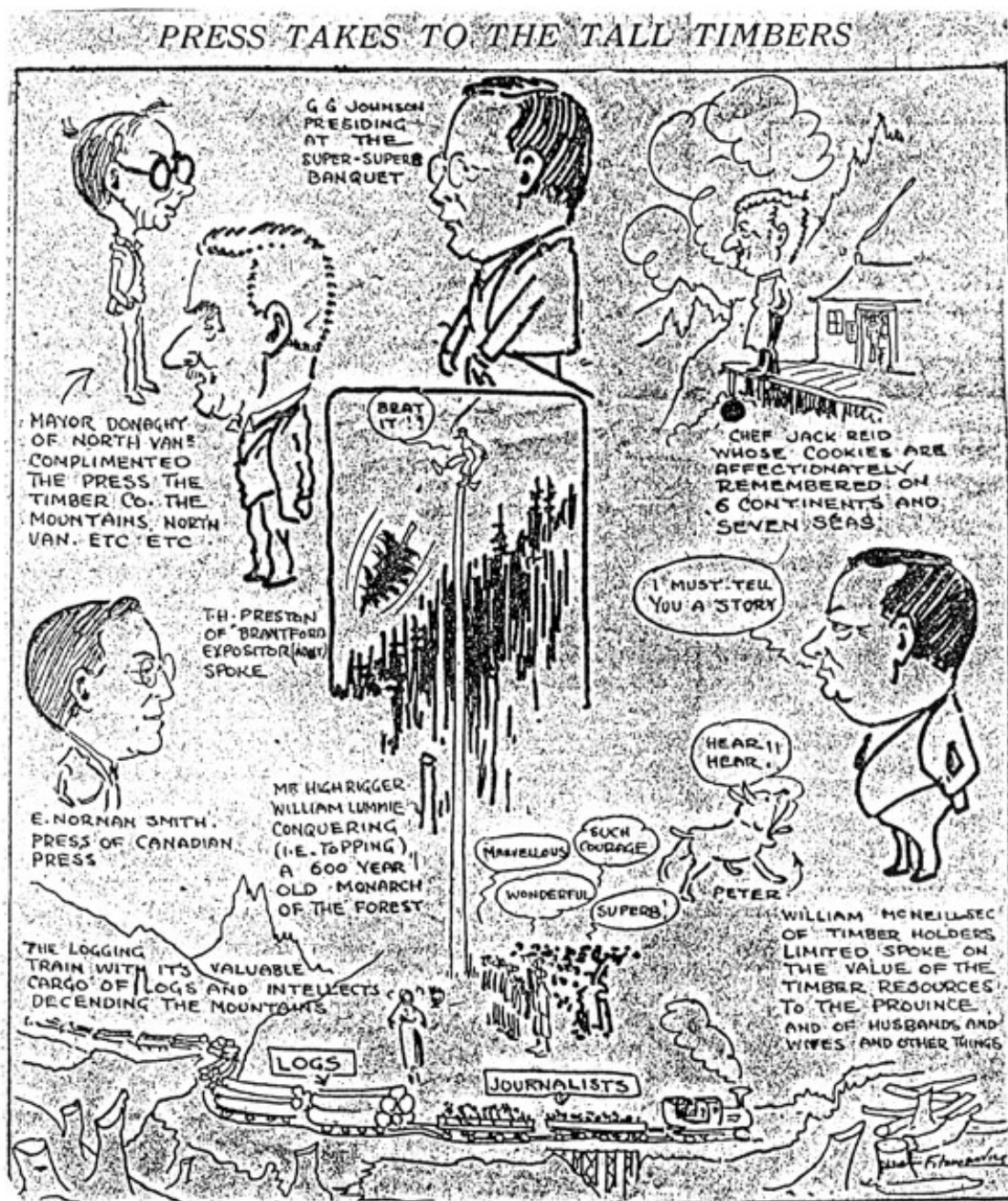
MEMBER DEMANDS PLEDGE

Star Sept. 10/25

Wires Premier Oliver That Sale of Capilano Watershed Timber Must Not Be Proceeded With

Charles Woodward, M.L.A. elect for Vancouver, has wired to Premier Oliver, who is at Vernon, that his resignation will be available at once if prompt assurances are not received that no sale of timber in the Capilano will be proceeded with. He is supported in his fight by Messrs. McKee, Odium, Mrs. Smith, Mr. McKenzie is out of town. Mr. Woodward, when interviewed by The Star this morning, admitted that he had wired his resignation to the premier, and that it would become effective in 24 hours if the stipulated requirements were not met. He refused, however, to state precisely what his stipulations were.

Members interviewed. Speaking of cabinet representation, however, said: "Vancouver is entitled to two cabinet ministers, but out of consideration to the government we have one. We did not want to embarrass the government or put it in any possible danger by the opening up of seats in the city." "Vancouver has been considered in this respect, and we think the government ought also to be considered of Vancouver. We have not asked for much, but that little we think we ought to get."



The Provincial Department of Health was of course increasingly concerned about the logging and other human activities in the watersheds. The Chief Sanitary Inspector DeGrey made "frequent visits of inspection to Capilano, Lynn Valley, and Seymour Creek watersheds, and is constantly in telephonic touch for any untoward emergency or required drastic action." In the provincial Sessional Papers, the annual report of 1923, the Inspector stated:

Every one acknowledges that the power of the Empire is in "the silent navy," but few people are aware that locally our future is in the sustained purity of our water-supplies, silently though zealously guarded by our Health Officers.

One of Western Canada's Level Headed Public Men--The Hon. T. D. Pattullo

HON. T. D. PATTULLO

Minister of Lands in the Government of British Columbia.



FOREST INVESTIGATION

NO MATTER how extensive they may be, the exhaustion of our virgin stands is only a question of time, due to the increasing demands of the lumber market. Depletion in the East and South and consequent shifting of the centre of lumber production to the Pacific Coast has focused attention as never before on the forests of British Columbia. Forests are a crop and, unlike minerals, are renewable, provided that the natural laws governing their reproduction and growth are understood and followed. Moreover, forests will in general reproduce themselves if given a chance, and the expensive operation of artificial regeneration or planting be avoided. It takes a full century to produce a timber-crop and costs for establishment will multiply several times before the return can be secured; and unnecessary expenditure, therefore, becomes a heavy burden on the future timber-crop.

Most of the virgin timber is logged by powerful equipment which leaves an area in what appears to be a devastated condition. The crop of seedlings may require years to establish, and the height growth at first is very slow on account of most of the energy being expended in the development of the root system. Many areas which on casual observation appear barren will be found on close examination to be well stocked. These various factors have resulted in the public delusion that our forest lands are left in such a condition after logging that another crop by natural regeneration is impossible. The data gathered during the past summer indicates that we can get a future crop from natural regeneration even where the present methods of logging are used. On exceptional sites some changes may be necessary, but, generally speaking, if fire is kept out of the Douglas fir mixtures the cut-over areas will restock rapidly after the virgin stand has been removed.

Article from Western Lumberman.

Being Extracts from the Reports Submitted by the Hon. T. D. Pattullo, Minister of Lands, and P. Z. Caverhill, Chief Forester for the Province

In an address to the Engineering Institute of Canada on Feb. 19, 1924, E.A. Cleveland advocated the formation of a Greater Vancouver Water District "as vital and urgent." He emphasized that there must be no logging in the Seymour and Capilano:

Logging and shingle bolt cutting is proceeding above Seymour intake. If this continues it is a situation for which there is no excuse. This city should have an abundant supply of pure water. The question of the removal of the timber also requires the most discriminating study. To allow anybody to get entrenched on Seymour Creek with logging and shingling operations would be almost criminal....The watersheds on the north shore are a heritage for this whole area. This is a golden opportunity for the exercise of that Greater Vancouver spirit which knows no internal bounds and is bound to avail itself of the heritage which nature has supplied for the common good of all.

The debate over logging activities above the intake in the Capilano water supply system got quite heated by the end of the summer in 1924. Contrary to Cleveland's recommendations, T.D. Pattullo, Provincial Minister of Lands, the minister who he wrote his strongly worded report for in 1922, decided to grant an additional lease of 170 acres of Crown land to the Capilano Timber Co., above the City's water intake (as a point of background Mr. Pattullo, since 1916, had often lobbied on behalf of the escalating timber industry).

Pattullo's determination sparked a furor from elected officials and citizens in the Greater Vancouver area. For many months there were numerous features, editorials, and letters in the newspapers about the controversy. When Chas. Woodward, a Liberal MLA, finally threatened to resign if the lease was granted, Premier John Oliver stepped in and resolved the situation by canceling the proposed lease.

On the evening of October 1, 1924, John Davidson, professor of botany at UBC, gave a ten page presidential address to the Vancouver Natural History Society entitled, *The Hand-Writing on the Wall (or) Wake Up! Vancouver*, before an audience of three hundred people. Much like Cleveland, John Davidson related, in sermon fashion, how the clear-cut logging was jeopardizing the Capilano water supply, especially by flooding and erosion, and how timber removal practices were creating forest fire hazards. [To quote from a paper written by Commissioner T.V. Berry, later in this report: "From the time the Capilano Timber Company commenced operations until they retired from the valley (in 1932), thirty-seven fires took place."]] Here are some excerpts:

... a logging firm started in on the Capilano - the thin edge of the wedge - they deforested the valley just below the intake, then around Sister's Creek, then the slopes of Crown Mountain, and where next. They want to go higher and higher up the watershed; Vancouver's water supply is of no interest to them, it's the timber they are after, and they mean to get it whether Vancouver survives or not. It looks as if British Columbia's forest resources were almost depleted if it is found necessary to attack the watershed of the largest city in the Province; this must be the last resort.

Even if logging operations on the Capilano ceased tomorrow, we shall continue for many years to be affected by the denudation which has already taken place in the valley, and one can safely prophesy more serious damage within the next few years.

Some may think that "greedy, grasping, thievish, and plundering" are extravagant words to apply to logging firms; but, when we consider that the present generation is permitting a comparatively few individuals - mostly outsiders - to steal the heritage of future generations, the language is very moderate, and when one has seen the reckless way some firms complete the devastation of the country, such language is far from adequate.

All logging in that area should cease at once, and steps should be taken to see that the area is reforested as soon as possible; nature should be assisted in every way to prevent erosion before it is too late. We cannot afford to listen to the reports of so-called engineering experts who say, there is no danger, we can build a dam to store water.

That is not the type of Engineer we need; we need men with experience, vision, foresight or whatever you call it, that will advise us to preserve our assets, and not tell us how to repair them after they are ruined. We need men who can see and act straight, whose eyes are not fixed on TODAY, but who are looking forward to the FUTURE welfare of the Province. A man with his eyes focused on too close an object becomes cross-eyed, distant vision helps him to see straight.

Temperance does not mean total abstinence; it means moderation or regulation of what you consume, so that you may have some for future use.... Intemperate people generally have an unconquerable craving for more, and they care not who suffers so long as they satisfy their craving. Wealth may be as intoxicating as liquor, many wealthy lumbermen have more than enough for their own needs, but they have the craving for more.... I am hopeful that some of these lumbermen may see the Light and obtain at least partial absolution by raising a fund for strengthening the Department of Forestry to train men in the care and conservation of our forests, thus helping to compensate coming generations for the devastation accomplished today.

I charge you then as fellow members interested in this subject to shed more Light throughout the community. I would like those of you who are engaged as teachers to discuss these matters in your nature study and Arbour day talks. Those of you who are parents should take every opportunity of showing your children what is being done, so that the next generation may elect or appoint more enlightened representatives than the present generation has done.

That same week Pattullo angrily responded to professor Davidson's speech with an article in the newspaper. The debate was becoming quite public and vociferous. Dozens of copies of Davidson's address were circulated throughout the Greater Vancouver area and the Provincial Legislature.

The previous week there was an article in the papers entitled *Watershed Logging Costly for Seattle - Vancouver Advised to Avoid Making the Same Mistake*. The Vancouver city engineer C. Brakenridge had asked for some information from George F. Russell, superintendent of the Seattle Board of Public Works, regarding Seattle's watershed: "Mr. Russell reports that a large part of the timber in the catchment area was sold several years ago under contract, the claim being that the timber was becoming ripe, a good deal of it being infected and that the sale would realize funds for the betterment of the water system.... 'Time has demonstrated this was a serious error,' said Mr. Russell."

In the January 1925 edition of the *Western Lumberman*, a forest industry magazine, there was an article which featured the comments of Major L.R. Andrews who was in charge of the provincial Ministry of Lands' Vancouver Forest District from 1920 to 1924. The article began with an editorial comment:

Newspapers and civic politicians have been talking a lot of rot regarding the Capilano timber situation and the following sane article should be read by all who desire the facts of the case.

VANCOUVER SUN, SATURDAY, SEPTEMBER 27, 1924

WATERSHED LOGGING COSTLY FOR SEATTLE

Vancouver Advised to Avoid Making the Same Mistake

Time has demonstrated that Seattle made a serious error in selling a large part of the timber in the catchment area of the watershed from which its water supply is derived.

This is a summary of the views of George F. Russell, superintendent of the board of public works, Seattle, in a letter to C. Brakenridge, city engineer, who requested information regarding the experience of the neighboring city.

Mr. Russell reports that a large part of the timber in the catchment area was sold several years ago under contract, the claim being that the timber was becoming ripe, a good deal of it being infected and that the sale would realize funds for the betterment of the water system.

A SERIOUS ERROR

"Time has demonstrated this was a serious error," said Mr. Russell.

Roll depths on the mountains is not great, he explained. Removal of timber results in rapid erosion which bares the hillside of the surface soil. The soil is washed down, filling up the basins and depleting the water supply.

Streams in denuded areas are flooded in the wet season and almost dry up in the summer, the report stated. In forested areas there is as nearly a uniform flow as can be expected in any water course.

EXPERTS' OPINION

"It has been shown by Dr. Ebermeyer of Munich that forest soil is unfavorable to the production of pathogenic bacteria," said Mr. Russell, "such as cholera, typhus, malaria and yellow fever germs. The humous acid, which develops from decaying vegetation and the tannin which leaches from the leaves have aseptic properties.

Another point emphasized in the Seattle letter was that colon bacteria infect the worms which feast on the alders which replace the conifers on denuded areas.

"We are contemplating making a change in the logging contract as well as reforesting all the areas already denuded," the letter adds.

Andrews participated in an “exhaustive study” of the Capilano watershed during his office and recommended that “**the city buy no mature merchantable timber, but purchase the land after** (emphasis mine) it is logged off and devote it to growing timber crops in the future.” Andrews sent a petitionary letter to Vancouver mayor L.D. Taylor and recommended the following:

1. That as about 9,580 acres, or 22 percent of the total watershed is privately owned and will be logged in any event, the additional logging of about 5,000 acres, or another 11 percent of Government timber, owing to its location, would not appreciably affect the situation or aggravate any disturbance in run-off or fire hazard that might result.
2. The timber is mature to over-mature, and should be utilized before it deteriorates. The first principle of good forestry should be applied to this area, namely, intelligent use and not abuse.
3. The timber could be utilized on the plan suggested and part of the revenue from the timber put back into the area to secure reforestation and absolutely maintain regulated stream flow to supply water for the city.
4. The Capilano could be logged, reforested and the Seymour Watershed, if acquired by the city, could be given like treatment. This process could go on perpetually to the mutual benefit of everybody concerned, keeping these two areas productive under scientific management.
5. The investigation showed that satisfactory reproduction on logged-off areas had not taken place and that it was desirable to establish a nursery somewhere near the intake and produce seedlings for transplanting, to insure fully normal second crop. Last summer’s investigations indicated, however, that natural regeneration will be satisfactory probably on 90 per cent of the area, without artificial planting.
6. Fire protection is the one and only danger and this danger can be minimized and possibly damage localized with every reasonable certainty. Without a doubt the cut-over lands in this area can be protected from fire during the danger period in the life of the young growth, within a margin of risk that should be considered reasonable in any sane business proposition.

In this interesting letter it is instructive to observe Andrews’ arguments and language and to understand that they were maintained in arguments and language of the provincial forest ministry, the U.B.C. Forestry Department, and of course in the industry, in years ahead. It is also important to carefully consider why one level of government (Forestry) endorsed and approved of the logging operations in the Capilano to continue, and other levels of government, Water Rights, Health, opposed it.

On Andrews’ final comment regarding forest fires, it was this very topic that finally broke the camel’s back, so to speak, in regards to logging in the Capilano and the establishment of the Greater Vancouver Water District. In the Forest Service *Report on North Shore Watersheds - Season 1925*, four fires occurred in the Capilano watershed from the logging operations. The fourth fire began on June 25th and was finally extinguished by September 1st. It burned an estimated 3,213 acres.

The estimated loss to operators in camp buildings and equipment, logging railway, fire fighting equipment and bridges destroyed amounted to approximately \$42,000.00, and costs incurred by them for wages, etc., amounted to \$11,205.95; while the Department’s costs amounted to \$229.97. (Vancouver Archives, 64-B-7, file #6)

Undoubtedly this black and spiraling spectacle, as was observed daily and photographed by Greater Vancouver residents, doused Andrew's claims of reasonable business "risk" regarding fire.



Photo of June 1925 Capilano fire taken by Leonard Frank. Vancouver Public Library photograph files.



4. THE GREATER VANCOUVER WATER DISTRICT



The Greater Vancouver Water District (GVWD) was officially formed on February 3, 1926, with E.A. Cleveland as its Commissioner. Cleveland abandoned his former office as provincial Water Comptroller, and with his experienced engineering and administrative background he helped guide the Water Board to establish its new mandate.

Under the terms of the new agreement in August 1927, provided in conjunction with the *GVWD Act* (legislative Act of December 1924), the provincial government “leased to the District for waterworks purposes for a period of 999 years at an annual rate of one dollar, all the Crown lands and timber in the two watersheds.” The GVWD Act empowered the District to: “Acquire lands and timber within or without the District to be used for its water works or for protecting or preserving its sources of supply.” In a paper presented by Mr. Cleveland in 1931, *The*

Water Supply of Greater Vancouver, he states that:

The District has since its formation purchased upwards of 13,000 acres of subdivided and unsubdivided lands from private owners, so that it now controls 93 percent of the entire area above the future dam sites and will, before the time arrives for the construction of the dams, have acquired the total area.

By January 1, 1931 the GVWD also gained title to the Coquitlam River watershed, under an agreement with City of New Westminster, who held the previous rights, title, and interest. A 999 year lease to the Coquitlam was not granted by the provincial government until 1942. Commenting on the incorporation of the Coquitlam watershed in the same paper Cleveland wrote:

The water of Coquitlam Lake is unsurpassed in quality. That it should remain so was the purpose of the Dominion Government in creating by Order-in-Council of March 4, 1910, a reserve of 55,670 acres of land around the Lake for the protection and preservation of the water supply. The area is heavily timbered and totally uninhabited. The outlines of the watershed have not yet been determined by survey. That the catchment is highly productive may be judged from the record of annual precipitation which averages 141 inches for the past 25 years.

Five years later in a letter dated November 30, 1936, E.A. Cleveland responded to an enquirer regarding the status of the Coquitlam and eloquently summarized the policy of the watersheds.

The Coquitlam watershed was placed under a reserve on March 4, 1910. This reserve is for the conservation and protection of the purity of the water supply of the City of New Westminster.

The District's policy is to preserve all the timber both commercially loggable and otherwise in the watersheds for the conservation of the run-off and to preserve the area from human occupation either temporary or permanent. By an Act of the Legislature passed on the 24th day of March, 1930, the watershed area "is reserved from location and acquisition under the "Mineral Act" and the "Placer Mining Act".

I would not attempt to set a value on the watershed lands in the Coquitlam, Seymour, and Capilano watersheds as they constitute an almost invaluable asset of the District permitting the complete and entire control of the purity of the water supply for all time so that neither now nor in the future will filtration or sterilization of the water be required.

The District is as completely protected as the laws of the Province will permit in the enjoyment of what amounts to exclusive rights to all the water.

Throughout the 1930's, 1940's, and 1950's forest companies and individuals sought permission to log the forest, for various reasons, in the watersheds. The GVWD administration was persistent in maintaining its position of no logging and continued to purchase the remaining alienated properties in the watersheds. Cleveland gained a notorious and, albeit respected, reputation from foresters and the forest industry.



Greater Vancouver Regional District Library photo collection – Vancouver watersheds



5. THE CAPILANO HIGHWAY DEBATE



In March, 1929, the Bridge River Power Company negotiated for a right of way with the Capilano Timber Company, for their transmission lines, necessitating the construction of a road. Immediately, Mr. J.W. Weart, chairman of the Garibaldi Park Board, suggested that advantage be taken to build a motor highway through the valley to Squamish and Garibaldi. This matter was raised several times in the next 25 years, much to the chagrin of the Water Board.

Following the completion of the power line and after the Sisters Creek Company finally vacated the wounded valley in 1934, the watershed became a carefully protected area. The only humans to enter it above the intake were Water Board employees and maintenance workers for the power company, all of whom held health certificates stating they were not carriers of water- borne diseases. (James Morton, Capilano - The Story of a River)

Aside from the topic of chlorination in the late 1930's and early 1940's, the most troublesome issue to have arisen after the GVWD gained control of the three watersheds was the proposal to build a public highway through the Capilano watershed. There were two or so previous occasions when the issue came to question. Now it was the persistent efforts of the Howe Sound Highway Committee (HSHC) from 1950 to 1954 which renewed the old thorn in the GVWD's side.

The HSHC was formed by those living in the Britannia Beach, Squamish, and Woodfibre areas. There was no road from Horseshoe Bay to Squamish in those days and people had to get on a ferry to get to the Vancouver area (see map, page 34). So the most likely route for a road, in the minds of the HSHC, was up along the logging road through the Furry Creek watershed, up over the pass into the Capilano, and down the former Bridge River Power Company's transmission line tote road to North Vancouver. The clever arguments, public pressure, provincial lobbying, and continuous scheming of the HSHC forced the Water District to carefully weigh and determine the effects of a public highway through the Capilano watershed. Both Cleveland and T.V. Berry (Cleveland's successor) wrote and presented briefs in protest to the whole affair.

In July 1951, after carefully investigating similar concerns in the municipal watersheds of the western United States, Commissioner Cleveland finished a 9 page brief on the matter, Proposed Public Highway Through Capilano Watershed. Here are some of the excerpts from his brief.

The fact that there are now very large or even moderate centres of population in the civilized world where physical conditions will permit their water supply, if taken from surface sources, to be maintained in a state of original purity is no argument against the preservation of such conditions where practicable. Indeed it emphasizes the special advantages and the enviable

position enjoyed by the Water District in its ownership and control of the watershed.

...the movement of uncontrolled foot and vehicular traffic in and through the watershed over a public road with no impediment opens up a field for water pollution of significance.

Additional quantities of organic matter will be brought down and the widened opportunities contamination will entail increased dosages of chlorine leaving no doubt in the mind of the user that he is supplied with chlorinated water.

The rigid restrictions on access of persons to the watershed accounts in large measure for the success of the Water District during the last two decades with its efficient protective organization in preventing serious outbreaks of fire.

...the inevitability of forest fire in the watershed has been proven many times since Capilano water first arrived in Vancouver in 1889 - now more than 60 years ago. The signs of this destruction are everywhere though fortunately not in such extensive degree as has been seen recently, as well as a few years ago, in the tragic occurrences in the Campbell River area and quite lately in the immediate vicinity of Greater Victoria's watershed (see Appendix A).

Easy access by logging railway during some of these fires did not serve to prevent them or to curtail their ravages to insignificant areas. Easy access along the bottom of the valley and organized firefighters, as has been demonstrated so many times, are slow and feeble agencies against the merciless flames of a raging fire.

The statement has been repeated many times and occasionally by men in authority that forest fires are for the most part preventable. If they are, our experience shows they are very frequently not prevented.

Irresponsibility and frequently a contempt for public property mark some small proportion of those who move about. The damage that may be done by careless, stupid or irresponsible persons when the instruments available are pollution and forest fire cannot be reckoned in dollars.

On September 6, 1951, the administration board of the GVWD unanimously passed the following resolution:

Whereas:

Since the inception of the Greater Vancouver Water District, it has been the considered policy of successive Administration Boards to endeavour to protect the water supply derived from the three catchment areas under the District's control from the dangers of pollution and contamination that might be caused by:

- (1) The encroachment of logging and other industrial activity.
- (2) The presence of human beings either for recreational or other purposes.
- (3) The very serious consequences of forest fire attendant upon any human habitation or activity within the boundaries of the catchment areas.

And Whereas:

In order to carry out these aforementioned policies the District has expended large sums of money from time to time for the acquisition of alienated land and timber situated within and marginal to these catchment areas, and has expended each and every year, relatively large sums of money to guard and preserve the two hundred and twenty-six square miles of watershed

lands from the hazards of fire and human pollution.

And Whereas:

The Government of the Province of British Columbia, in entire sympathy with the aforementioned policies, has from time to time materially assisted in their enforcement by the leasing for a period of 999 years of all crown lands and the timber thereon situate within the catchment areas of the Capilano River, the Seymour River and the Coquitlam River; and by making provision in the Forest Act, the Mineral Act, the Health Act and the Game Act for protection of these areas from the encroachment of industry or any human agency, activity or habitation.

And Whereas:

The Administration Board has, by unanimous resolution on two prior occasions, declared its opposition to any plans looking to the construction and operation of a public road through the Capilano catchment area and now deplores the activity of field parties making road surveys within the Capilano catchment area and the press, radio and other reports purporting to emanate from the Minister of Public Works that the Government of the Province of British Columbia plans to construct a road from Squamish to North Vancouver through the Capilano catchment area instead of by other routes available.

A copy of the resolution and the brief by Cleveland were sent to all the member Municipalities of the GVWD. In turn each voted in favour of the resolution. For instance, the District of North Vancouver resolved that they:

...endorse the protest of Dr. E.A. Cleveland and protest to the Government of B.C. and the Honourable Minister of Public Works against any road or highway, which would permit free access through or in the Watershed to the general public, on the ground that such would violate the sanctity of the Watershed.

Mr. Cleveland died in January, 1952. Directly afterwards the GVWD appointed G.M. Gilbert and Theodore V. Berry as Joint Commissioners. Gilbert passed away quite suddenly one month later in February 1952, and Berry became sole Commissioner.

With the Social Credit government taking power in the latter half of 1952 (and onwards for some 20 years) Phil Gaglardi, the new Highways Minister, continued the battle for a highway through the Capilano watershed, after succumbing to the political pressures of the HSHC. In February, 1953, Commissioner Berry wrote to M.L.A. Sowden in Victoria about the consequences:

It will be virtually impossible to repel the pressure that will be put later on the Water District and the Provincial Government to permit the area to be used for fishing, hiking, mountaineering and picnic parties.

Another serious danger to the supply is that of turbidity in the water which is bound to follow during the period of construction and for several years afterwards when large quantities of fine clay and sand may be washed into the stream. This condition could make the Capilano water unusable.

It will be very difficult to prevent the exclusion of logging and other industrial activities once a road traverses it. At the moment as you know, the catchment area is free from encroachment by certain provisions given in the Forest Act, the Mineral Act and the Game Act.

In my travels in the East and in the West of both the United States and Canada, there are many communities that think we are very fortunate to have 225 square miles of catchment area free of human occupancy, activity and encroachment of industry.

On February 15, 1954, Commissioner Berry submitted a thirty page brief entitled *Proposed Public Highway Through the Capilano*. Here are some excerpts.

It is recognized and accepted by Public Health and Waterworks officials, that a protected and originally pure water is unquestionably superior to one that is continuously and extensively polluted. It might be asked that if adequate means of water purification are available and employed why undertake watershed protection? The answer involves the "Principle of Multiple Barriers." It recognizes the axiomatic fact that all human efforts, no matter how well conceived and conscientiously applied, are imperfect and fallible.

The unrestricted public use of a road through the Capilano Valley will remove the first and most important barrier to the purity of the supply - that of isolation. The Water District by rigid control has for twenty-eight years maintained the isolation of the supply and by so doing has successfully maintained the purity of the supply - and also its very existence - by protection from fire.

Now dealing with the probability of excess turbidity which may be expected during and following construction of the proposed road. For several years, during periods of high rainfall, the Capilano has shown, on occasions, a condition of high turbidity. This condition is caused by the effect of the wash by heavy rains on clay and gravel banks, carrying excess amounts of clay and sand into the river. The river is charged with particles of fine clay in suspension which condition persists for some hours in colloidal suspension even after the larger particles have precipitated out. This condition has been particularly bad on several occasions during each winter in recent years and it is the firm opinion of observers that the condition occurs on more numerous occasions and to a worse extent since the transmission line road was constructed.

One has only to observe the very much greater passage of silt than heretofore which occurs after heavy rains down the mountain slopes into West Vancouver following the partial clearing of the forest cover on Hollyburn to realize how the clearing of fifteen to sixteen miles of road right-of-way 240 ft. wide through the Capilano Valley will give the heavy rainfall in the valley an excellent chance to scour and carry large amounts of sand and silt to the river.

If the purity of the water deteriorates due to excess turbidity from the existence of the road, the public may find that its investment of \$15,000,000 in the Capilano Valley is gone unless it is willing to introduce some form of treatment - possibly coagulation and short-term (2 hour) settling, and perhaps a more expensive treatment by filtration.

Nature has clothed the Capilano Watershed with a magnificent forest growth. Forests have a very important function in the control of run-off from a catchment area. The principal benefit is the protection of the winter snowfall from rapid melting and run-off by the protection and shade of the trees against direct rays of sun and wind. Another is the retarding effect of trees, humus, forest waste and low shrubs generally on precipitation in its movements towards the streams. These agents afford opportunity for the water to sink into the soil and so reduce the extreme fluctuations of stream flow and thereby diminish the intensity of floods. Reduction of the high rate of run-off into the streams and the consequent reduction of flood intensity tends to protect the surface from erosion and wash of soil into streams. Thus turbidity which has been explained as most undesirable, is kept to a minimum by the forest cover itself.

As to the question of destruction of forest cover by fire, the inevitability of fire in the Capilano from human act has been proven many times....From the time that the Capilano Timber Company commenced operations until they retired from the valley, thirty-seven fires took place. Since the withdrawal of the logging company from the valley, four fires have occurred - all lightning strikes. In addition one man-made fire occurred in the summer of 1952 when fire from the Cleveland Dam basin clearing operations jumped to the adjacent forest.

The rigid restrictions imposed on access to the watershed accounts in large measure for the success on the Greater Vancouver Water District during the last twenty-eight years in preventing forest destruction coupled with an efficient organization of experienced and alert rangers and first class fire fighting equipment.

The fact that very few large or even moderate size communities in the civilized world enjoy physical environment such that will permit of their water supply to be taken from surface sources in original state of purity, is no argument against every effort being made to preserve this condition where practicable. It serves to point up and emphasize the very unique and enviable position enjoyed by the people of this Lower Mainland in its ownership and complete control in a state of isolation of its watershed.

The existence of the road through the valley would encourage logging operators to seek cutting rights in the upper part of the valley. The logging in the Capilano Valley even on a selective basis is a programme that should perhaps not be undertaken for many years, if ever.

It has been charged by some people, who in most cases are motivated by self-interest, that the policy of the Water District since its inception in keeping the area isolated from travel and recreation has been one of extreme caution by "over zealous officials." The answer to this irresponsible suggestion is that in the twenty-eight years of administration of 225 square miles of watershed area, the District's assets have been preserved from pollution and loss by fire. It has been suggested also, that some "compromise" should be available. There is no compromise with a burned-out valley or a polluted water.

The most recent attempt to rekindle this old controversy of building a public highway through the Capilano came in late 1990 from Rita Johnston, then Social Credit Minister of Highways, wearing her pink hardhat. This announcement came just after a rock slide near Lions Bay during a storm, which cut off traffic on the highway. The matter received some renewed attention and criticism and then fizzled out (see Appendix C, submission #64).

6. FORESTERS AND THE WATERSHEDS

In view of the North Shore floods of the past week it was felt that it would be inadvisable to present to the Greater Vancouver Water Board the report in which is mentioned the cutting of timber. Those members of the Board not familiar with flood control through multiple use and proper cutting methods would be influenced by recent conditions and probably view the report in an unfavourable light. It was agreed that the report would not be presented to the Board at its next meeting in November. (C.D. Schultz & Co., confidential memo, November 14, 1955)

Only a month had elapsed after Commissioner Cleveland's death in January 1952, when F.G. Johnson, a consulting forester, formally solicited one of the new Joint Commissioners of the GVWD, G.M. Gilbert, to hire the "Services of a Forester". In his proposal he discussed "protection work" of the watersheds. His appraisal of the forests in the watersheds were such that they contained "large areas of mature and overmature forests rapidly becoming decadent."

By Johnson's calculations "50% of the mature accessible watershed forest is decadent." His proposal, worded as some foresters argued for our watersheds recently (see Appendix C), was to liquidate the old-growth and replace it by "maintaining healthy, vigorous forest stands that offer the greatest security for sustained watershed protection." According to Johnson, standing snags, windthrow, insect infestation, and old forestry operations' slash debris, were all contributors to the threat of fire. Johnson, understanding the GVWD's outstanding record on the topic of fire, slyly wrote:

The fact that we have not suffered extensive fire loss in the watersheds during the last 30 years, should not lull us into complacency.

Because of this contrived scenario, he proposed an exhaustive appraisal and forest stand inventory studies to be conducted. From the little information I possess on his formal application, I simply assume he was never hired.

F.G. Johnson's proposal was submitted just prior to a resolution passed during the Fifth British Columbia Natural Resources Conference, held in Victoria, February 27-29, 1952. The Conferences began in 1948 and were organized by representatives from the provincial Liberal government, industry, and university. The conferences were initially organized to catapult the Liberal government's agenda on the topics of resource-use in B.C. In light of the industrial agenda of the day there were two important industrial opportunities (black holes) which the Liberal government was campaigning for and receiving funds from. One was the damming of the Nechako River for Alcan's hydroelectric project, and the other was the implementation of Forest Management Licenses (later called Tree Farm Licenses), the hand-out of B.C.'s public forests to private and powerful corporations. Dr. Cowan, chairman of the Resolutions Committee, and professor of Zoology at U.B.C., presented the following resolution (number 9), introduced at the previous annual conference, which was passed:

Whereas the primary purpose of watershed areas, where surface water is impounded for domestic and industrial water supply, is the production of a continuous supply of water; and
Whereas **controlled** (emphasis mine) watershed use, rather than the maintenance of full virgin forest canopy, has the advantageous values for water supply development; and
Whereas the controls and protection required for the water supply against potential or actual sanitary and fire hazards and erosion are required, whether logging is or is not practiced; and

Whereas conservation means use and management of a resource and, and in the perpetuation of the forest resources, places emphasis on forest management on a sustained yield basis; and Whereas endorsement of the plan by those best qualified to judge, i.e. professional engineers and foresters and other technical men concerned with the resources of a watershed, is tantamount to guaranteeing that the plan provides for all the factors that govern proper use of land;

BE IT RESOLVED that this Conference endorses a programme of forest management on a sustained yield basis for watershed lands where surface water is impounded for domestic and industrial water supply.

Proposed by A.J. Saunders and seconded by R.T. Wallace.

In comparison, the resolution of the Conference was directly opposite to the policy created, defended, and practiced by the GVWD. Interestingly enough, Victoria's Water District began logging its watersheds, on a selective basis, in 1949, with no lack of controversy. R. Davis, previously the provincial Water Comptroller, similar to Cleveland, was hired as the Commissioner of the Victoria Water District, but with an important difference. R. Davis argued for logging in the Victoria's watershed (see Appendix A). The controversial agenda for Victoria's watershed (as well as many others) was tabled before the Conference's Resolutions Committee in order to facilitate the appearance of acceptance by the so-called leaders, academics, and power brokers of society. It also provided an indirect means of access for a certain forestry consulting firm into Greater Vancouver's watersheds.

In early October of 1953, C.D. Schultz & Company Limited (Schultz Co.), a prominent forestry consultant firm, was hired by T.V. Berry, GVWD Commissioner, to conduct a survey of the forests in the watersheds. The Schultz Co. proposed to conduct "a preliminary analysis of the extent, nature, and value of the forest resources currently owned by the GVWD." The minutes of the GVWD October 1st board meeting state the following:

It is felt that the time is appropriate to survey our resources in the three catchment areas. Our forest cover maps, where they exist, are obsolete. These should be revised and brought up to date.

The motion was passed and authority given to Berry to allow the Schultz Co. to conduct the survey. Paging through some of the files in the Vancouver Archives, I had come across a confidential letter written by the Schultz Co. on November 10, 1953, to Commissioner Berry to cancel three stories on the topic of the Greater Vancouver watersheds.

Confirming our telephone conversation we are pleased to advise that the Daily Province has seen fit to cancel the proposed story by one of their reporters, Mr. Leiterman. Their decision was no doubt based on the fact that you as Commissioner ...and Dr. George S. Allen as Dean of the Faculty of Forestry at UBC were each misquoted, and the figures used in the three articles were far from factual or applicable.

Mr. Wm. Forst, Managing Editor of the Province was definitely cooperative when the true facts pertaining to the watersheds was disclosed. I intimated to Mr. Forst that I was sure that you would give him every co-operation as regards public announcements when details of the plans for protection and management of the watersheds was available.

C. D. Schultz & Company

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VANCOUVER, B.C.

World's Forests Are His Business

By MARGARET FRANCIS

A HUSKY, rugged ex-football star and former logger, has become one of the men responsible for putting money into the pockets of thousands of British Columbians, as well as people in other parts of the world.

Charles D. Schultz, P. Eng., a forest engineer whose job is protecting the province's forests, is planning the development of B.C.'s timber wealth for today and centuries to come.

As a professional engineer, consulting in forestry and engineering, he has guided hundreds of projects here, in British Guiana, New Zealand, Australia, South and Central America towards these ends.

PROTECTS PARK

"Forestry is the management of forest land for continual production of maximum value return," is how he defines his work. In his Howe Street offices, along with colored maps showing various types of forest in B.C., is even a detailed map of Stanley Park, showing how his firm helps protect the park by reforestation and preservation of its ancient trees.

Versatility is the word for the Schultz firm. On a recent afternoon one engineer was working on a preliminary road location, by photogrammetric methods; another was compiling and evaluating land and timber for a right-of-way; the third was designing the span of a 150-foot bridge.

Others were working on: an audit of a forest inventory and forest protection plan; an analysis of the effect of proposed legislation on a timber company's investment policy; a design of marketing procedures for a foreign pulp producer; preparation of maps relating to road construction, bridge design, logging plans and forest management; an analysis regarding the preservation of the timber potential of a large virgin timber reserve.

"Forestry is every British Columbian's business, as well as ours," comments Schultz who has just returned from New Zealand. B.C. has 120,000 square miles of forest-

producing lands whose products have a value of half a million annually. Over 50 percent of every dollar earned in the province come directly, or indirectly, from forestry.

FORESTS MEAN WEALTH

"Without our forests, we wouldn't have the half-billion dollar Alcan development. Alcan came here because we have water power. Without forests, we wouldn't have water. Forests have to do with fish. We couldn't have our fishing industry if B.C. was barren as starving, forest-denuded China, which was once heavily forested."

Schultz points out that, to produce one million feet of lumber, it takes eight men. Statistics show that these eight men have 18 dependents, who are directly served by 12 more, such as doctors, lawyers, storekeepers, telephone operators and school teachers, who in turn have 28 dependents. Therefore one million board feet of lumber has found its way into 66 pockets.

Maintaining the flow of these forest dollars is the job of the forest engineer through developing and managing timber enterprises profitably; protecting forest from fire, insects and disease; balancing reforestation, growth, production and sales, with the future always in mind.

TO SCANDINAVIA

In 1950, Schultz was a member of the B.C. forestry delegation to Norway and Sweden. "The average Scandinavian acre cannot grow as much wood as ours," he points out. "In spite of this, Sweden and Norway sell over twice as much wood each year as we do. Clearly we must take full advantage of the terrific productive capacity of our forests."

Professional engineers trained in B.C. find they are equipped to deal with timber and engineering problems all over the world, and men like Schultz are constantly junketing around the globe.

"We meet every timber problem here," said the man who, amongst other assignments, was called by the Anglo-Iranian Oil Company to report on construction and development problems of New Guinea's tropical forest,



FOREST ENGINEER Charles D. Schultz has timbered areas on maps hanging on his office walls marked dark so they can be easily spotted.—Dave Buchan Photo.

BIG PROBLEMS

"In the pioneer northwest we have learned to work harder, to cope with problems of big timber, big mines, rugged mountains. We could not be conventional in our approach, we had to develop initiative. Here in B.C. we have a bird's eyeview of developments in Canada and the United States, giving us a broader outlook in all branches of engineering, which is why our professional engineers are called upon so much to do jobs elsewhere."

"Timber industry problems are much the same the world over, the forest engineer discovered in 1937 when he became B.C. timber commissioner in the British West Indies and South America."

Only internal problems are different. This year Schultz was called to New Zealand by the Tasman Pulp and Paper Company, to check timber development and ascertain if growth could sustain a

planned mill operation. He had to advise on the protection of a 200,000-acre forest of Monterey pine and map the utilization plan.

Vancouver-born, Charlie Schultz started working in B.C.'s forests after graduation from North Vancouver High School in 1922. As a logger, log scaler, lumber grader and timber cruiser, he caught the romance and challenge of the industry and enrolled at the University of B.C. in forestry. His logging background made him a good athlete and he became a star footballer on the McKechnie cup team. He was a campus leader as well, president of Men's Athletics for two years and vice-president of the B.C. division of the Amateur Athletic Union of Canada. He was chairman of the stadium committee that fought for the building of a stadium on the University campus.

IN ARMY

On graduation with a B.A.Sc. in forest engineering he began

his career as a government forest engineer. He broke off during the war for soldiering until he was invalided out of the army. He formed his own firm, C. D. Schultz and Company (Foresters and Engineers), in 1944.

One of his global jobs, in 1949, was consultant on the establishment of industrial timber operations in British Guiana for the British government.

Schultz' engineers fought their way 600 miles through B.C. for over a year, surveying timber on the 60-foot Trans-Mountain Oil Pipe Line right-of-way from the Alberta border.

When the City of Seattle proposed to flood the Skagit River watershed in B.C. for a power project, the professional engineer's firm was called in for the survey, appraisal and valuation of land and timber in the area to be flooded, so a financial settlement could be reached between the American city and the province. ●

I became quite intrigued by the letter, and to my astonishment I stumbled upon the three cancelled stories weeks later. They were randomly placed in another file along with a critique from GVWD staff. During the time of the Schultz Co. being hired, a reporter coincidentally got wind of how some foresters desired to see a change in the Greater Vancouver Watersheds' policy. He collected enough material and had finished three separate stories for the Daily Province, dated October 19, 1953. Doug Leiterman had been with the Province for 6 years and had five months previous been awarded the prestigious 1953 Associate Nieman Fellowship in journalism for Canada. It seems likely that someone, either directly or indirectly involved with the interviews, notified the Schultz Co, who in turn arranged to procure them from the Managing Editor.

It is regrettable that the stories didn't run, but there are some deeper concerns about this incident. It is a rare and uncommon event in the newspaper world for an outside party to have photocopied access of a story in advance of it being run. The event must be construed as morally questionable. Circumstances for pressures on reporters by affected parties do occasion themselves but rarely do we have written evidence of an event such as this. Perhaps we are fortunate to learn how the Schultz Co. began to shape the future of our watersheds by their influence and connections to the media world.

The interviews in the stories, in order, were with the UBC Dean of Forestry, George Allen, Commissioner T.V. Berry, and Allen E. Thompson, forester for the Seattle District Cedar River watershed. The following quotes are most of the unpublished stories.

First story commentary and interview with George S. Allen, Dean of the faculty of forestry at UBC:

Is there an \$80 million stand of timber going to waste - dying on its feet on Vancouver's doorstep? ... It could probably produce a clear profit of \$250,000 a year every year for a century. And at the end of that time, they estimate there would be more timber there than when they started....Within its guarded acres grow - by conservative estimate - more than a billion board feet of merchantable timber. The stands of Western red cedar are considered the finest on the continent.

But to bring them to market would require a radical change in civic thinking, which starts with the maxim "Save the trees!" According to Dr. George Allen...that sentiment is as obsolete as the cross-cut saw. The day of cut-and-get out has been superseded, he says, by timber cropping, where there are a dozen new trees growing for every mature tree that is felled. They emphatically point out that to leave a forest untouched is as foolish as leaving apples on the limb. If you don't pick them when they are ripe, they fall and rot. If you don't cut timber when it's mature, it succumbs to fire, decadence or disease.

According to Dean Allen, probably half the 144,370 acres of the Greater Vancouver watershed are decadent now. This type of forest is an open invitation to disaster in his view. "The more old trees you take out the less chance of fire or disease destroying your watershed. That's where the timber cropping program should start." Timber cropping is the word. "Don't call it logging," warned one expert, "or you'll make the Water Board's hair stand straight up on end."

Dean Allen points out that a lightning fire tomorrow under certain conditions could send the watershed up in smoke. "We think we're playing it safe. Actually we're playing it very unsafe. The great danger is that there is no transportation in there to control fires. One of these days we'll get a bad lightning strike, and no way of getting men in there to fight it." A timber

program, Dean Allen explained, would cover the area with a network of good roads.

Dean Allen, who tramped around the watershed with a survey party nearly 20 years ago, says leaving the forest to nature is the poorest kind of conservation. "Modern-day forestry looks at it this way. If you don't cut timber when it is mature, nature will drop the trees for you by wind, bugs or fire. Nature does the harvesting that way and everybody loses. Too many people look on a 500-year old stand of timber as a gold mine - try to make it last. That's waste, not conservation. It is ignorant to think of a forest as a timber storehouse. It's really like a slow-growing farm. In 100 years it can produce a whole new crop, if properly managed. And the new one will be healthier and lustier than the last."

Second story commentary and interview of Commissioner T.V. Berry, with an opening quote from E.A. Cleveland:

"They will log that watershed over my dead body." The zealous guardian of Vancouver's water supply has been dead [almost 2] years, but his successors aim to make sure no pirate loggers force the good doctor to turn in his grave."

"The city of Vancouver paid large sums of money to get the watershed out of the loggers' hands," declared the present Commissioner Theodore Berry. "We have no intention of letting them back in now"....He is convinced that timber cropping under whatever guise is still predatory logging, bound to damage the water supply it is his job to protect....Mr. Berry, an eminent sanitary engineer who often works 12 hours a day and put off his dinner nearly three hours to talk to this reporter, showed little liking for the logging fraternity. "I'm judging them," he said, "by what they did to the Capilano." That section of the watershed was "devastated" for timber before 1926, and has since been vulnerable to fire and erosion.

"That's the forester for you," the commissioner added. If the breed has changed its stripes, he hasn't noticed. Every six or seven years people who are "after the timber" start pressuring for logging in the watershed. But the Water Board "holds the area in trust for the people and will continue to do so. Mr. Berry wondered "why people butt in on other people's business." The Board, he emphasized, is not subject to "the influence of groups through newspapers." Besides, he said, "we're in the water supply business - not the logging business." He flatly rejected the foresters' thesis that it would be feasible (and profitable) to be in both.

"If there are experts who claim modern timber cropping can be carried on without cutting off the water," Mr. Berry says he can get just as many experts to argue the other way. Access roads, he maintains, concentrate the run-off - upset the balance of nature - stir up sediment in colloidal suspension so the water is so dirty it can't even be filtered clean.

He is not too concerned at the danger of a bad fire, wiping out the watershed for lack of a road to get in and fight it. "We have been operating 27 years, and our losses have been negligible. No recent fire has been over three acres. Our protection is so good that when other people get in trouble they call on us.... Our experience is, the more roads there are the more people want to go in, and frequently these people don't take too much care."

But, says Commissioner Berry, there are 600,000 people getting their water off those slopes and some day there may be 1,250,000. It would be a "great pity to take chances. Some day," he concluded, "the people will thank those of us who today may be considered fanatical in our desire to protect the watershed."

Third story commentary and interview with Allen E. Thompson, forester for Seattle's Cedar River watershed:

There is an old saying among watershed men: "Never trust a forester." But the city of Seattle disagreed with the maxim, and hired one instead.

Instead of putting a padlock on the area - as does Vancouver - and earmarking it for "water production only," Seattle embarked on a dual-use experiment which attracts interested foresters from all over the continent.

The experiment has been so successful it is now on a sustained yield basis for both water and timber. Forester Allen E. Thompson, hired by the city to manage the project, declares he is convinced that "in the long run, wise use and good protection of watershed forests will be more economical and safer than a policy of non-use....Just as the watershed produces a continuous supply of water, so can it can produce a continuous crop of timber, which enters into the economy of the community, providing employment for many citizens, raw materials for industries of the region and a substantial source of revenue for the city.... controlled watershed (timber) use, rather than maintenance of the full virgin forest canopy, has advantageous values for water supply development."

Seattle's program began under handicaps Vancouver would never be faced with, foresters say. Annual cuts in the early days before full supervision was imposed ranged upwards of a hundred million board feet. Clear-cutting - stripping a hillside as clean as a billiard ball - was practiced almost exclusively.

Nevertheless, reports Mr. Thompson, the process of natural reforestation came into operation. "With the passing of the years there has been established a continuous second growth forest, many thousands of acres in extent, with present ages varying from tiny seedlings just starting to stands 40 to 50 years old. Failure of this natural process to re-establish the forest has only occurred on small areas."

Is Seattle's experience applicable to Vancouver's watershed, which foresters say is dying on its feet?

No, says Commissioner Theodore Berry, Water Board chief. He is acquainted with Seattle's Cedar River program, but says the topography of that watershed places it on an entirely different basis than Vancouver. "Our valleys are narrow, V-shaped, with steep hills vulnerable to erosion. The Cedar River country is entirely different. Besides, they have a lake which the water can run through to deposit its sediment. If timber were cut off our vertical slopes they would be almost impossible to rejuvenate."

Foresters, however, disagree. UBC's Dean George Allen, who is familiar with both watersheds, says he doesn't think there is any fundamental difference. [G.S. Allen wrote an article for the B.C. Lumberman magazine in 1949, *Multiple - Use Forestry Proves Sound Economics on Cedar River Watershed*.] He admits Vancouver's watershed is steeper and the slopes go higher, but he believes proper controlled logging could be practiced here with perfect safety. As to erosion, he points out that even the clear-cut logging of the Capilano years ago has left no evidence of extreme erosion.

Who is right? What are the facts about the amount of timber in the watershed? The amount of revenue it could produce? The dangers, if any, to the water supply? No one can say. But because there is a case for controlled timber cropping, and because Seattle has found it worthwhile, foresters believe the Greater Vancouver Water Board should set up a commission to study the question.

After Commissioner Berry himself received copies of the unpublished stories, **he circulated them to two of his experienced staff members, both of whom wrote critiques**, mostly about the Dean of Forestry. Chief Engineer K.E. Patrick wrote:

In nature's normal cycles timber that falls to the forest floor, rots and creates soil for the growth of new timber, which forest floor incidentally absorbs and holds the winter's rain, releasing it gradually to the streams and lakes during the dry periods in the summer....the answer would be the same which could be put in the form of an equation - rotten trees equal more soil equal heavier future growth and water retention....The loss of timber by a bad fire surely is in excess of the cost of preventing it if that can be done. Nevertheless experience to date indicates that fires do occur in logging areas and one can only conclude that it is economically impossible to prevent them....Lightning strikes in the watershed have not ever produced a very serious fire....Dean Allen, if correctly reported, seems to have missed the point entirely. Logging, if carried out without disturbing the forest floor too seriously and if sufficient brush is left, will probably not cause erosion. Erosion is caused, however, by roads being built which by their very nature act as a water barrier, forcing the water to be collected and concentrated which in turn unbalances the natural stability that created slides and erosion of the ground....Devastation of forest cover by loggers may be seen by any who wish to do so on the hills above West Vancouver....I am not too well acquainted with other watersheds but suggest that Seattle is not the only watershed that could be used for comparison purposes. I would also suggest that it is only natural for the protection of his job that forester A.E. Thompson should declare that it is wise to crop a watershed.

The second staff member, Bill Angus, long time Watershed Inspector, wrote the following:

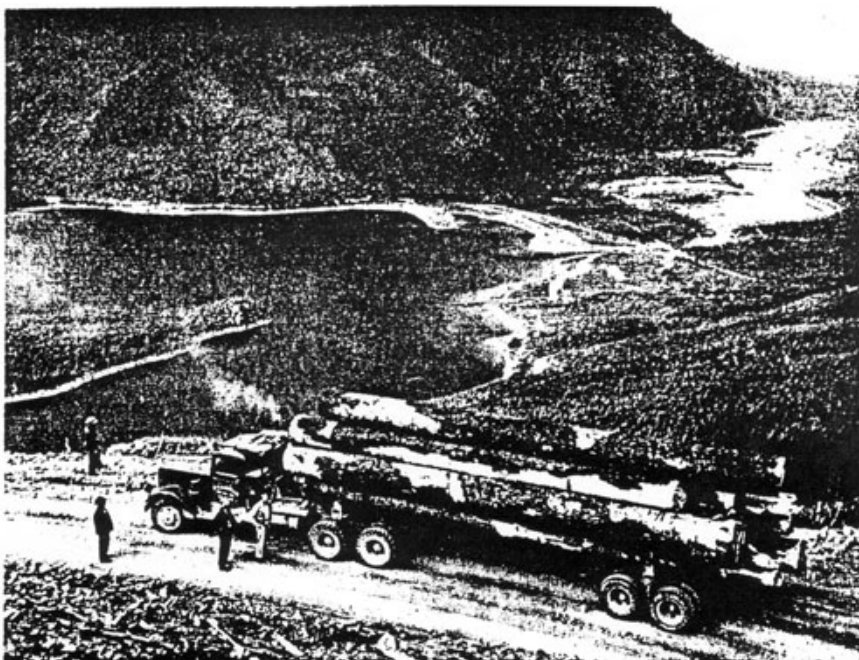
Is Dean Allen an authority on water? Can he explain what happened in Ontario and dealt with in the survey by Professors A.F. Coventry and J.R. Dymond. Both these men are authorities on Water....The Royal Commission Report in Ontario 1947... recommended that 5,120,000 acres should be returned to forests....Do forests get decadent?...Damage by insects have always started adjacent to logging operations where the balance is upset....Can Dean Allen state definitely or show any area where a man made forest is equal to a natural forest? No. Again where are the logging interests including Dean Allen propagating first growth fir. The answer to this is that they cannot accomplish what the so called decadent forest did, namely produce first growth fir....I wonder if the endowment of our Forestry Faculties by the large timber operators influences the thinking of the heads of the said faculties. Re the Cedar Creek Project it seems rather peculiar that the areas held privately within that project were and are held by large timber interests, namely: Weyerhaeuser Timber Co., Soundview Pulp Co., Anacortes Veneer Inc. The existence of a lobby to exploit the Cedar Creek area is no secret. The poor payer of water rates is not organized so God help him against the timber interests lobby....Where have the logging interests tried out in practice sustained yield? Why do they not prove their point in some area outside the watersheds first.

The Schultz Co. managed to neutralize the stories, which could have jeopardized their interests, and quietly proceeded to complete their initial survey by February 1954, in a Report to Commissioner Berry, Preliminary Analysis of Watershed Management for the Greater Vancouver Water District. The Report outlined preparations for a “watershed management plan” for the 3 GVWD watersheds:

This work may be briefly outlined as follows:

1. Field-work to include:
 - a) a forest inventory
 - b) a soil survey
 - c) a sanitation survey
2. Supplementary field trips to other watersheds to examine the results of existing management programs.
3. Preparation of a watershed management plan.
4. Preparation of a brief for and assistance in negotiations with the Government of British Columbia to secure permission to apply the management plan under the terms of the present leases.

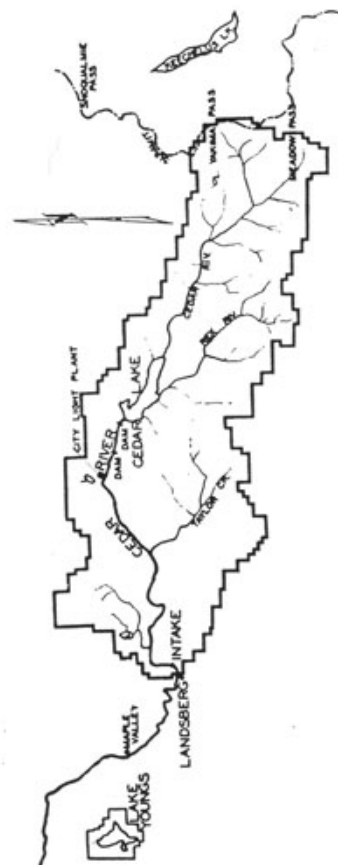
In July of 1955 Mr. Berry journeyed together with a forestry consultant from the Schultz Co. to Seattle and met with the Seattle watershed forester A.E. Thompson “to discuss the matter of watershed management and sustained yield cut.”



Top: Seattle's Cedar River watershed extends eastward from Landsberg for an airline distance of 25 miles, with a maximum breadth of eight miles. The area totals 143 square miles, of which 95 square miles are owned by the city, 37 square miles by the Federal government

and 11 square miles by private timber operators. Bottom: A logging truck stops in Seattle's watershed. Across the west end of Cedar lake are the slopes of Mt. Washington, covered with natural second growth timber. This area had originally been cut over in the years 1920-24.

Western City Magazine, May 1954, p.41.



The Schultz Co. set up a special meeting with the Water Board in November 1955 to present to them their final Report. Prior to submitting their 2 volume Report, *Appreciation of Factors Affecting Watershed Management on the Watershed of the Greater Vancouver Water District*, there was an extremely heavy rainfall for three days, with up to 10 inches of rain in a single day. Because of the significant and untimely deluge, which caused a great amount of natural erosion in the watersheds, and was featured in all the local newspapers, the Schultz Co. postponed the meeting. The Schultz Co. didn't "appreciate" that "factor".

I discovered another confidential Schultz Co. memo in the Vancouver Archives which described a meeting with Commissioner Berry on November 10, 1955.¹ It was decided that:

1. In view of the North Shore floods of the past week it was felt that it would be inadvisable to present to the Greater Vancouver Water Board the report in which is mentioned the cutting of timber.
Those members of the Board not familiar with flood control through multiple use and proper cutting methods would be influenced (emphasis mine) by recent conditions and probably view the report in an unfavourable light. It was agreed that the report would not be presented to the Board at its next meeting in November.
2. The report should be reviewed carefully and where possible stress the fact that floods need not result, from proper cutting. C.D. Schultz & Company Limited will go over the report and make the necessary changes and additions.
3. Present public relations efforts should be directed towards educating all concerned with the fact that there can be flood control through proper cutting and the multiple use of the watershed, for water yield, and timber.
4. Mr. Berry is to loan C.D. Schultz & Company Limited his own book regarding the above points. The book should be returned to Mr. Berry personally so as not to get filed away on the Water Board library shelves.

The Schultz Co. was most apprehensive about how the untimely storm event would create a separate storm from Water Board members, which could jeopardize two years of effort to introduce the topic of logging ("cutting") in the watersheds. The Schultz Co., obviously quite nervous, pulled out and put Commissioner Berry and themselves in a terrible bind as to how to present the Report to the Water Board. William McMahan, the vice-president of Canadian Forest Products, who was also persuading the GVWD to accept a logging program, summarized the delicacy of the matter in a letter to Berry in May of 1955:

I am certainly glad to hear that you have made so much progress on what may be a very contentious matter.

According to the December 14, 1956, GVWD Minutes, the altered 2 volume Schultz Co. Report wasn't officially submitted to the Board until over one year later, in early 1957.

The transition from the Water Board's firm resolution of no logging to the present day pseudo-policy of clearcut logging in the watersheds was rooted in the Schultz Co. reports and recommendations therein. The intriguing manner and circumstances in which the reports were finally presented to the Water Board and the Municipal taxpayers were, without a doubt, carefully controlled and managed. In order to establish a counter-policy proposal, to log in the public's water supply, it was important for

¹ After I discovered these confidential memos and "suppressed newspaper articles" in the Vancouver Archives, the Greater Vancouver Water District had someone sift through all the Archive files. These files were donated to the Archives in the late 1950s.

the Schultz Co. to conduct an extensive inventory, keep a low profile by controlling public announcements, and develop a framework of un-threatening terminology with convincing explanations. The thirty year-old resolution of no logging, accompanied with the aim of a “pure” water supply, was the enormous and sensitive hurdle which the Schultz Co. had to somehow persuade those in authority to climb over. The initial implementation of the recommendations for a “scientific” watershed management program from the Schultz Co. Report were not pursued by the GVWD until some 4 years later.



Cover of Joe Garner's book, *Never Under the Table* (courtesy of Joe Garner). Shows C.D. Schultz to left (initials on brief case), and Minister of Lands and Forests Bob Sommers in middle. Passing of envelope with cash “under the table”.

Unfortunately for the enterprising Schultz Co. their profile and credibility crumbled in 1958. That was when Robert (Honest Bob) Sommers, the Provincial Minister of Lands and Forests, C.D. Schultz himself, and others, appeared in court to face criminal charges of conspiracy and bribery. Details of that controversial account were recently published in Joe Garner's book “Never Under the Table, and in Forest Planning Canada (Honest Bob Sommers and the Sacred Roots of Big Timber, March/April 1993). Among many other controversies, Mr. Garner relates a personal account regarding the Schultz Co. to another scandal back in 1953. The Schultz Co., with a staff of approximately 100, collapsed to a mere handful. The Schultz Co. had the exclusive contracts to conduct the inventories on all the Forest Management Licences (now Tree Farm Licences) that were being handed out by the provincial governments. The entire affair was no doubt extremely difficult and embarrassing for those directly and indirectly affected. That is no doubt the main reason why only the final Schultz Co. Report to the GVWD remained on the shelf after it was finally submitted.

GREATER VANCOUVER WATER DISTRICT

MINUTES OF THE ADMINISTRATION BOARD

STORM AND FLOOD DAMAGE - GENERAL - NOVEMBER 2, 3 & 4, 1955

Conditions leading up to the Heavy Precipitation and Flood Period.

Heavy rains had occurred Monday, October 21st when Capilano rose to something in the order of 10,000 c.f.s. - in itself a high river. During subsequent days the river was running fairly high and ground was well saturated.

On November 2nd - 7:30 a.m. snow depths on the watershed mountains at the 3,000 ft. level were about 12-inch plus the snow that melted that day. Water content was 48%.

By November 3rd noon, 80% of this snow had melted and run off.

Rainfall:

Cleveland Dam - From noon November 2nd to noon November 3rd - 7.65 inches

Seymour Falls Dam - From 8 a.m. November 2nd to 8 a.m. November 3rd - 8.43 inches.

Seymour Falls Dam - From 8 a.m. November 3rd to 8 a.m. November 4th - 9.92 inches.

Coxitlam - From 8 a.m. November 2nd to 8 a.m. November 3rd - 8 inches.

Coxitlam - From 8 a.m. November 3rd to 8 a.m. November 4th - 6.9 inches.

CAPILANO SYSTEM - STORM DAMAGE

The normal operating level of the dam had been maintained as from October 31st at 555.00 elevation on the advice of the District's consulting engineers and officials. (This is 8 feet above crest of spillway.)

The water elevation in the reservoir rose from 555.4 at 3 a.m. November 3rd to 562.6 at 8 p.m. on the same day an increase of 7.2 feet. By 6 a.m. November 4th the lake elevation was back to elevation 555.0

Without going into the mass of statistical detail gathered during the flood, perhaps the following is of interest.

At midnight November 2nd, the lower outlet works at the Dam were brought into use and by 3 a.m. November 3rd lower and upper outlet works were wide open with a total river discharge from outlet works and spillway of 12,680 feet. By this time the storage was beginning to accumulate. By 8 p.m. the next night, when the peak was reached, the overall discharge from the dam had risen to 22,500 c.f.s. and the elevation of water behind the dam risen to 562.6, an increase in elevation of 7.2 feet. This represented an equivalent flow of the river being ponded of over 4,100 c.f.s. Consequently at this peak the river, without the ponding effect, would probably have been 22,500 plus 4,100 or a total of 26,600 c.f.s. This is not the highest river discharge on record but closely approximates the momentary peak discharge of 28,000 c.f.s. recorded in 1949 and a one hour peak of 27,000 on the same date. This would indicate that the river discharge did not quite reach the intensity of the flood discharge on November 26th, 1949.

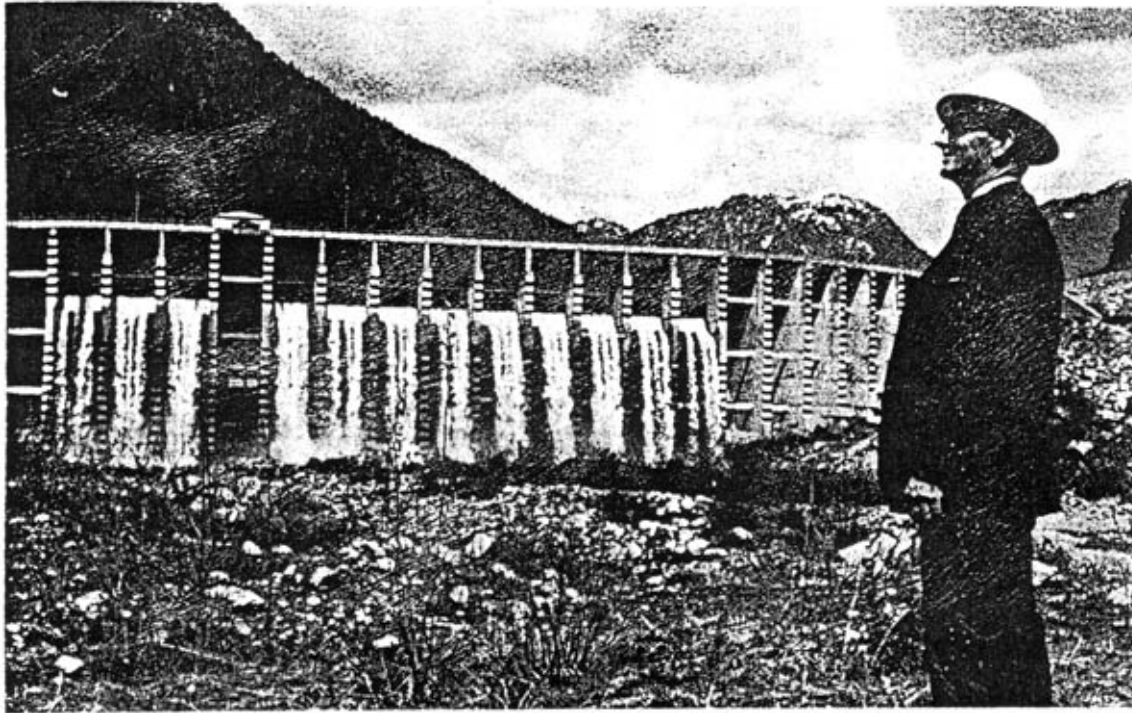
FLOW IN CAPILANO RIVER DURING STORM OF NOV. 2/4, 1955

AT OLD INTAKE AS DETERMINED FROM OUR LEVEL RECORDER AND

RATING DATA FOR RIVER BY WATER RESOURCES DIVISION

Time	Recorded River Level (ft.)	Flow (c.f.s.)
Nov. 2nd, before 3:00 P.M.	21'-2"	530
4:00 P.M.	21'-2½"	555
5:00 P.M.	21'-3"	588
6:00 P.M.	21'-4"	635
7:00 P.M.	21'-5"	695
8:00 P.M.	21'-6"	750
9:00 P.M.	21'-8½"	930
10:00 P.M.	31'-2"	1,390
11:00 P.M.	41'-0"	2,360
12:00 M.N.	51'-4"	4,280
Nov. 3rd, 1:00 A.M.	61'-8"	6,760
2:00 A.M.	71'-8"	8,730
3:00 A.M.	81'-4"	10,110
4:00 A.M.	81'-9"	11,040
5:00 A.M.	81'-10½"	11,330
6:00 A.M.	91'-0½"	11,710
7:00 A.M.	91'-4"	12,380
8:00 A.M.	91'-7"	12,970
9:00 A.M.	91'-10"	13,560
10:00 A.M.	101'-2"	14,380
11:00 A.M.	101'-8"	15,630
12:00 Noon	111'-0"	16,490
1:00 P.M.	111'-5"	17,630
2:00 P.M.	111'-8"	18,250
3:00 P.M.	111'-10"	18,700
4:00 P.M.	121'-2"	19,600
5:00 P.M.	121'-8"	21,000
6:00 P.M.	-Recorder out	

7. THE SEYMOUR DAM CONNECTION



Kel Blakeney admires the Seymour Lake dam. He helped to clear the flood basin.

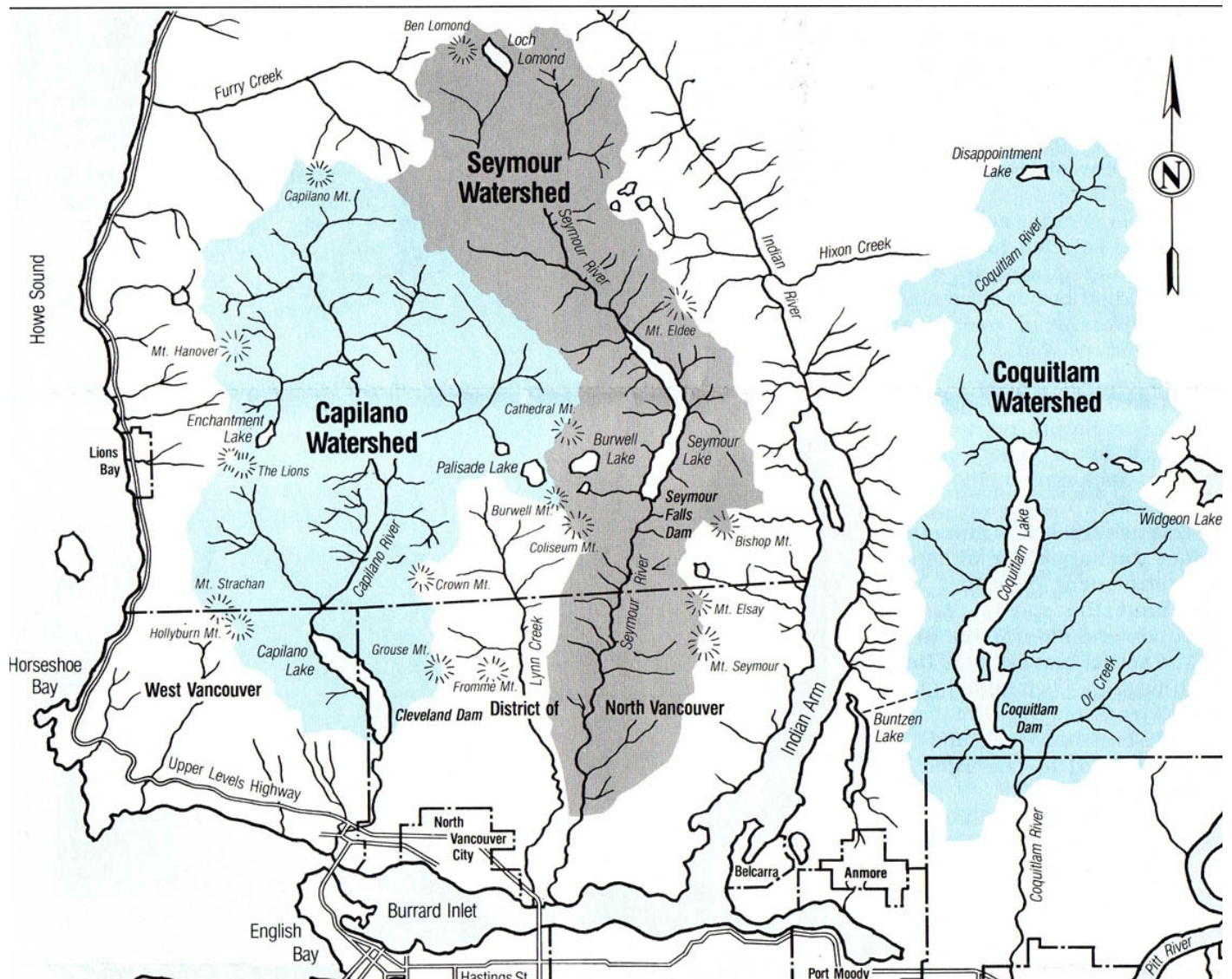
Highballer, May 1968, p.43.

At the end of 1957 the Water District hired its first forester. A.K.G. (Kel) Blakeney, a “civil engineer who has worked in logging since graduating from UBC in 1936”, used to work for the temporarily defunct Schultz Co. From the commencement of the clearing operations for the construction of the new Seymour dam reservoir on December 16, 1958, Blakeney was the GVWD’s Control officer.

The GVWD had hired Consolidated Services Ltd., consulting foresters and engineers, to direct the clearing operations on 487 acres. Their contract ended in January 1960. The president of Consolidated Services, D.R. Bakewell, used to be the vice-president of the Schultz Co. Consolidated Services were to handle “the control of records and operations involved in the marking, loading, hauling, dumping, booming, storing, and selling of the logs.” By the end of the contract, 13,109 M.B.M. of logs from the clearing project fetched \$543,984.25 by sealed tender. Another 250,000 board feet of downed timber were also removed because of a wind storm near the edge of the clearing.

During the clearing operation a 5 mile access road was built alongside the eastern portion of the Seymour Reservoir. The Minutes of the November 10, 1960 District Board meeting state something which ran contrary to their policy for the previous 34 years, that:

It is now planned to continue this road further northward, eventually extending it to Loch Lomond about nine miles north of the terminus of the existing road. This road will be of benefit in the reconstruction of the Loch Lomond storage facilities for which extensive development is programmed in the next several years, will assist in the suppression of fires in the area, and will eventually be used for necessary land clearing when the second lift of the Seymour Falls Dam is constructed.



GVWD public pamphlet showing the three watersheds and reservoirs. Below, or south of the Seymour Reservoir, is the off-catchment, or former Seymour Demonstration Forest lands.

The GVWD Minutes also suddenly referred to an area intended to be clearcut about 5 miles south of the dam, no doubt due to what the their new forester Blakeney warned as a threat to the watershed:

It is also intended to construct several miles of rough access road in the vicinity of Hydraulic Creek. This road is also considered necessary as a forestry protective measure. The standing timber in the area has been heavily infested with the balsam woolly aphid and a number of balsam trees are slowly dying. If these are not removed they will in a few years be a very serious fire hazard. It is, therefore, intended to salvage them for what revenue can be obtained, before they turn into useless snags. Every attempt is being made to reduce the spread of this infestation but so far entomologists have not been able to suggest an effective control.

The March 10, 1961, Minutes on this woolly aphid invasion read as follows:

Further to our report of an earlier meeting relative to the woolly aphid infestation in the balsam species timber in our watersheds we now propose to log over about 280 acres in the Seymour watershed lands in two parcels in order to salvage the infested timber before its market value deteriorates.

This area will produce about eight million board feet consisting of 4.2 million feet of hemlock and 3.8 of balsam.... Although only the salvage of balsam is required to secure its market value before the timber deteriorates beyond saleability it is wise to cut also the hemlock so as not to leave sparsely standing timber subject to loss by windfall.

The April 21, 1961 Minutes:

In order to facilitate the dumping and sorting of logs from the salvage operations being undertaken by the Corporation in the Seymour Valley, arrangements have been made to lease for a period of two years a water lot fronting part of Moodyville D.L. 272, N.W.D. from the National Harbours Board at an annual rate of \$803.13, i.e. 5/8 cents per square foot.

The July 21, 1961 Minutes:

The salvage of merchantable timber necessitated by the infestation of balsam woolly aphid is proceeding satisfactorily in the Lower Seymour Valley.

You will recall that at the March 10th Board Meeting it was anticipated that the logging operations would give a net profit of \$40,000. With the prices obtained for the various contracts and if the log market maintains its present level, we anticipate that the above estimate of profit will be exceeded.

Concurrently with the above salvage program a further investigation of the entire watershed is being carried out to determine the aphid infestation. From our present information it appears that the salvage program will have to be extended to cover a period of from three to five years in the future to remove trees already damaged or infested. It is estimated that in the Seymour watershed alone the coverage of some 2,500 acres carrying about 65 million board feet of timber must be cleared. This area extends along the bottom of the valley from the present operation to the north end of the new Seymour Falls Reservoir and also extends on the west slope of Seymour Mountain to the boundary of Seymour Park.”

Since the above area amounts to 7% of the total Seymour Watershed lands, careful consideration must be given to the effect of forest cover removal on soil erosion and productivity of the watershed. The ideal policy would be to remove only those trees which are infested and will eventually die and this method of cutting will be followed where the density of the residual forest cover is sufficient for stabilizing against wind and snow. In other cases it will be necessary to clear cut the entire area.

It should be pointed out that the effects of failing to continue with the salvage program are serious and can be summarized as follows. Snags or the standing remnants of the infected trees will create a serious fire hazard. The thinning of the forest cover by nature may result in extensive windthrow areas where the residual stands are not stable. These extensive windthrow

areas will also be very dangerous fire hazards, and the effects of soil erosion and run-off due to fires will be far more serious than if the land had been clear cut.

Studies of this problem are being continued in the Coquitlam and Capilano watersheds.

In the October 6, 1961 minutes:

The infestation of the Capilano and Seymour watersheds by the woolly aphid appears to be more widespread than originally thought and an increase in the scale of our salvage operations is anticipated.

The relocation of our log dump and booming grounds is desirable in order to acquire larger and safer facilities to handle the anticipated expansion of the timber salvage program.

In the Minutes of October 20, 1961 it states that the Seymour road was extended another 3.3 miles northwards to Orchid Creek.

The final objective is to eventually extend this road all the way to Loch Lomond a distance of about 6.5 miles.

It is recommended therefore that the road be extended another three miles during the 1961-62 winter season with the remaining 3.5 miles to be constructed to reach Loch Lomond during the 1962-63 season.

In the November 24, 1961 Minutes:

The total log production since the inception of the program this year to November 15th, was almost four and one-quarter million feet.

Competition for the logs and the weighted average selling price of the logs has been increasing during the past two months. At the last sale held on November 10th, four and five tenders were received on each parcel of logs as compared to two bids for each parcel in early September.

The Corporation has obtained 40,000 Douglas Fir seedlings from the B.C. Forest Service to replant the areas being logged and other areas cleared of forest cover during the construction of the Seymour Falls Dam.

In the 1961 Annual Report, under the introduced heading of Watershed Management:

The program to remove the timber in the lower Seymour watershed infested by the balsam woolly aphid commenced on July 11 and at the year end a volume of five million six hundred and thirty thousand board feet of various species had been removed, of this four million, eight hundred and sixty three thousand was sold during 1961.

The timber was sold by sealed tender in lots of approximately one-half million board feet at ten log sales. Gross Revenue from log sales was \$202,759.83. The net revenue from log sales after charging cost of extraction, booming, reforestation etc. and provision to cover such contingencies as washouts of the Seymour main road, damage to the 90-inch main and others than may occur as a consequence of the salvage program was \$42,127.19.

From the August 10, 1962 Minutes:

About four and one-half million board feet of balsam were salvaged from 316 acres in the lower Seymour Watershed. The volume of all other species removed at the same time was some seven million board feet.

Total revenue from the sale of logs and a small volume of cedar material converted into products on the site was \$515,074.93.

Our accounts now show that all of the \$165,000.00 so far authorized for the Loch Lomond Road, watershed access roads and logging roads has now been expended. To this account \$22,000 will be credited from the revenues derived from the salvage logging of the first contract area completed in June of this year. To complete the Loch Lomond road it is estimated that an expenditure of about \$80,000 will be required.

On December 14, 1962, the Minutes described the results of a storm, typhoon Frieda, on October 12 and 13 which “blew down some seven million board feet of timber on 200 acres of watershed lands.” Plans to remove the trees were to be implemented as quickly as possible in the accessible areas.



1992: south Seymour watershed entrance.

8. THOSE DAMNED BUGS AND THE AMENDING INDENTURE

Forest management practices in the Watershed are restricted as a result of the terms of the present 999-Year Lease.... This provision of the 999-Year Lease should be re-negotiated, or a special Forest Management Agreement should be entered into, so that a comprehensive Watershed management plan can be initiated.

(Schultz Co. Report, *Appreciation of Factors* ..., 1956, Chapter 16)

On February 6, 1963, Commissioner Berry sent a letter, accompanied with a thirteen page brief, to the Minister of Forests, Ray G. Williston, to request an amendment to the conditions of the 999 year lease in the watersheds. The GVWD could legally log on the old District Lots within the watersheds which they originally bought from private holders (map, p.48). The remainder of the old-growth was on Crown lands. Curiously enough, Berry's position was now a complete reversal from the one which he carefully argued for in the Capilano Highway report a decade previous. In fact, the request was identical to the proposal which the Schultz Co. recommended in their initial survey report in February, 1954. Berry, in the language of a consulting forester, asked the Minister:

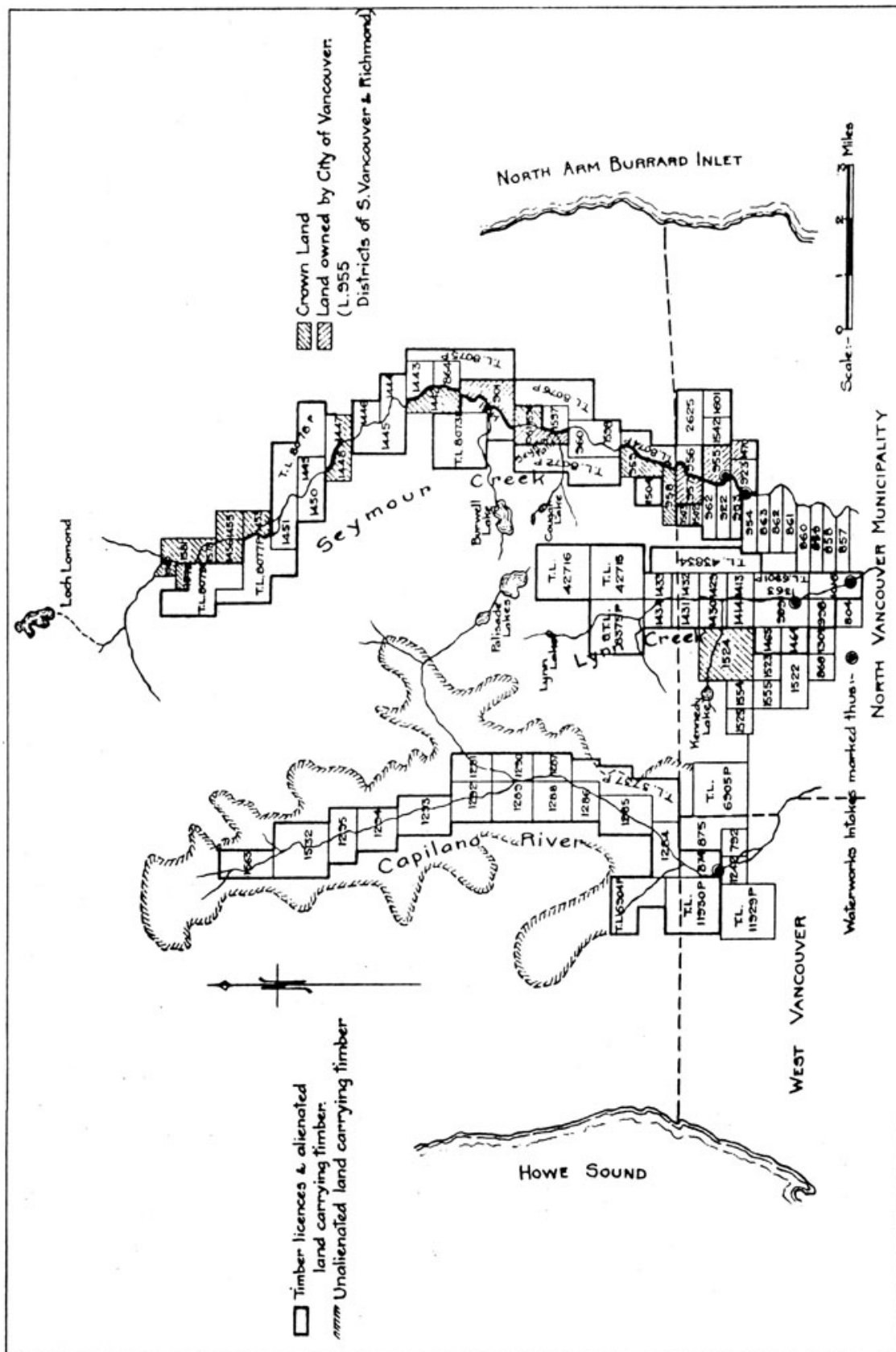
To permit the GVWD to protect or improve the quantity and quality of water presently supplied to 800,000 people and eventually to probably 3,000,000 people and to create income for people of British Columbia from an otherwise wasting asset, it is strongly advocated that a scientific program of management of the forests within the watersheds be encouraged by appropriate amendment of the terms of the existing 999-year Crown leases. The program, on a perpetual basis, would include removal of mature, overmature and diseased timber, reforestation and afforestation, construction of access roads for fire suppression and the progressive development of a young and thrifty forest. It would be conducted with the prime purpose of safeguarding and improving the water supply.

The implementation of this recommendation will result in greater protection to the forests within the watersheds thereby (1) improving them as sources of water supply, (2) producing revenue to the Crown Provincial by way of royalties, and (3) assisting the Water District in its function of supplying water of a high quality to the Lower Mainland municipalities.

The accompanying thirteen page brief dubiously explored the argument and defense of the request to amend the terms of the 999-year lease. There is no name attributed to the author of the brief. The following quote is from the introduction:

The dual use of domestic water supply areas utilizing their ability to produce the two closely related renewable resources of water and timber is receiving increased interest. The neighbouring cities of Portland, Tacoma, Seattle, Bremerton, Victoria permit harvesting of the mature forests within their watershed areas on a systematic and scientific program. The first consideration is watershed improvement by scientific management with timber harvest as a by-product. Results to date have been encouraging and in the opinion of a prominent forester: "In the long run, wise use and good protection of watershed forests will be more economical and safer than a policy of non-use."²

² The brief incorrectly attributes this quote to George S. Allen, former Dean of Forestry at UBC, who had subsequently become Director of Research for Weyerhaeuser Timber Company, the same company which had been logging in Seattle's watershed. The quote is actually from Allen E. Thompson, the forester of the Seattle District watershed, as quoted in the third unpublished story by Doug Leiterman, already mentioned. Someone had access to the old unreleased stories and, ironically, the quote was finally published.



High yield streams of superior water quality are generally associated with undisturbed forests. However, this favourable influence of forests on water yield is questioned by hydrologists on the grounds that the larger trees require more water for evapo-transpiration than other plants, thus reducing the total amount of water available for stream flow.

The immediate problem faced by the GVWD is not one of high yield but of quality protection. The decadent forests covering the water catchment areas, with a heavy cedar content and a high incidence of snags coupled with the frequency of lightning activity, constitute a continuing and increasing fire hazard. The recent infestation of the balsam woolly aphid has now spread over the entire watershed area and for which no counter measures have yet been found, is yearly adding more snags to an already unsatisfactory condition.

These conditions call for the immediate start of a scientific program of management of the forests within the watersheds. By applying the principles of good forest management the watersheds can be improved. Intensive research and long-range observations will result in the development of the most suitable dual-use procedures.

T.V. Berry retired as Commissioner on August 31, 1963, and Ken Patrick, the Chief Engineer, was assigned the position. F.R. Bunnell became Chief Engineer, and D.L. MacKay, previously Senior Assistant Engineer, became the Deputy Engineer.

The provincial government's Minister of Lands, Forests, and Water Resources, Ray Williston, and the GVWD signed the *Amending Indenture* on March 7, 1967, and granted Tree Farm License No.42 to the GVWD:

WHEREAS the parties hereto have mutually agreed that the timber on the said lands should be managed on a sustained yield basis for the purpose of developing, protecting and improving the water-yielding characteristics of the lands.

The contract had 27 clauses attached to it. The GVWD now had to present a Forest Management Plan. Clause #4 states the GVWD has to:

manage the lands... based on a sustained yield capacity of all the said lands for the purpose of developing, protecting and improving the water- yielding characteristics of the lands by growing continually successive crops of forest products to be harvested in approximately equal annual or periodic cuts adjusted or equal to the sustained yield capacity of the lands subject to this amending Indenture.

Clause #20:

That starting on the first day of January next following the date of this amending Indenture, the wood harvested from the lands subject to this amending Indenture in any one year shall not be less than fifty percent and not more than one hundred and fifty percent of the approved annual cut, and shall not vary more than ten percent from the total approved cut over a period of five years.

The contract had some type of flexibility from the above obligations. Clause #6 states:

(a) the Lessor may notify the Leasee that the lands described in the notice are no longer subject to the terms and conditions of this amending Indenture;

(b) the Leasee may notify the Lessor that the lands described in the notice are required for the development and utilization of the water supply and are no longer subject to the terms and conditions of this amending Indenture.

Clause #22 was construed to officially permit the Ministry of Forest's personnel access to the watersheds:

...the Lessor and employee of the British Columbia Forest and Lands Service are entitled at all times to free and unhampered access to any part of the lands... and any operations conducted thereon for the purpose of inspecting or for such survey, study, or investigation as the Lessor may consider to be necessary.

For the first few years of the *Amending Indenture*, K.C. McCannel was the head forester for the GVWD. Like Blakeney, McCannel had been employed with the Schultz Co. and was once in charge of the overall inventory and assessment contract with the GVWD. Now he was in charge of GVWD forestry operations. In his first annual report he wrote:

We have only one year behind us on the full management of the timber resource that is so much a part of our watershed and we are fully aware of the great potential this area offers to demonstrate the economics of multiple purpose so even though all problems cannot be faced at once the important protection and development features will be undertaken systematically immediately our new inventory is available and analysis of major problems is complete.

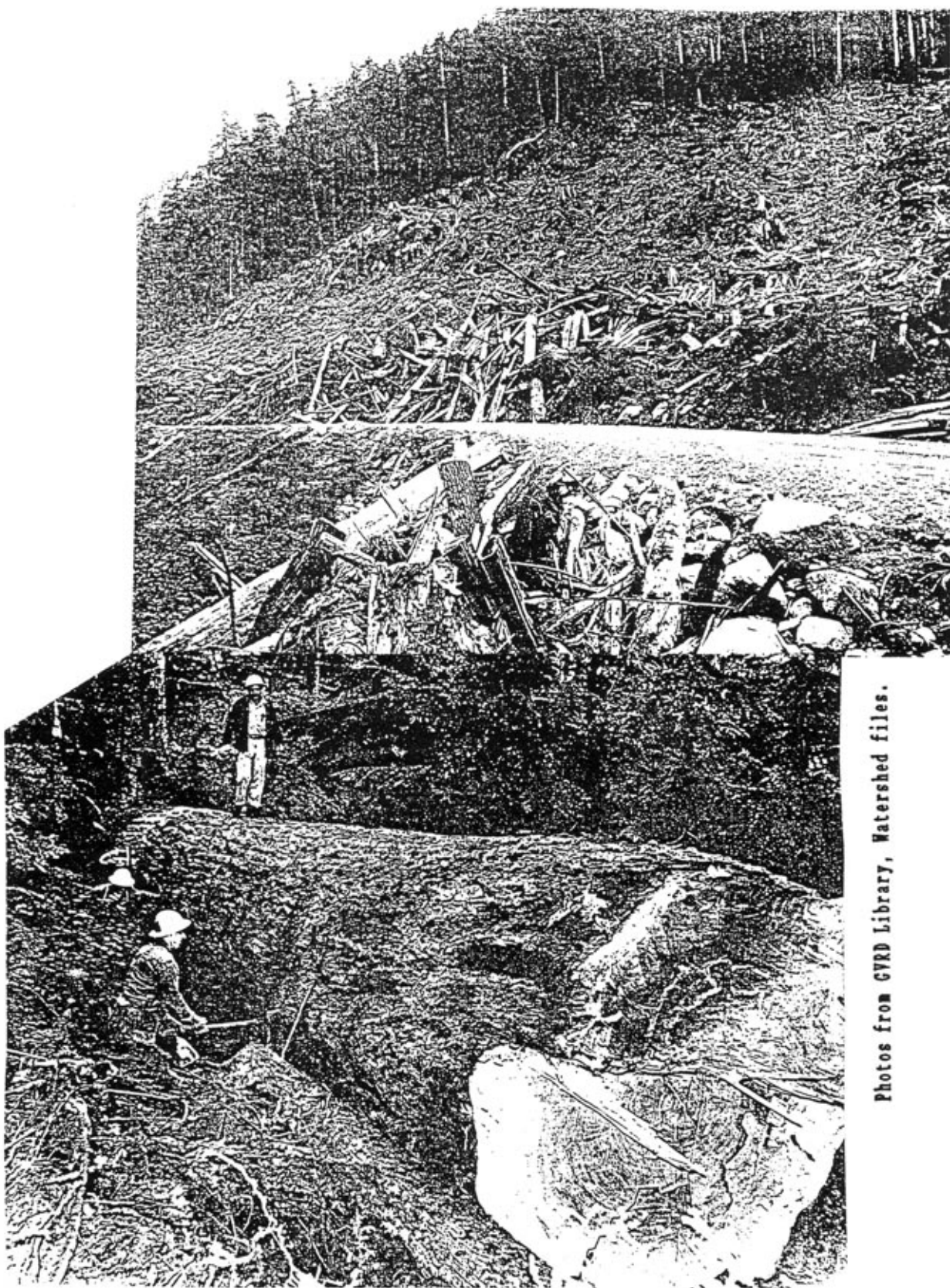
In the 1968 annual review he wrote:

As from inception of forest operations on the Watershed in 1961, logging has been directed primarily to the salvage of balsam woolly aphid infested stands.

Heavy balsam woolly aphid infestations have continued to prove a forceful and almost overpowering factor in determining areas requiring prior attention for logging.

Current and future extraction operations will continue to be aimed toward eradication of diseased and marketable downed trees and their replacement by healthy young stands. A thrifty forest stand is a watershed asset.

The production and retention, for year round use, of pure water is the principal objective of a watershed reserve.



Photos from GVRD Library, Watershed files.

9. MULTIPLE-USE MANAGEMENT ON TREE FARM LICENCE #42

A. HYDROLOGY

The science of hydrology, dealing with the origin and distribution of water as a natural renewable resource, is still relatively undeveloped. The application of the principles of hydrology to the management of watersheds is almost entirely new.

The chief reason why so little data have been published about forest-stream flow relations is due to a lack of experimental watersheds. Suitable experimental areas that will meet requirements of geology, soils, topography, vegetative cover, and rainfall distribution are difficult to find. Experimental watersheds are expensive to develop and difficult to operate.

(Schultz Co. report, Appreciation of Factors ..., 1956, Chapter 14)

So wrote the Schultz Co. in their final Report to the GVWD in early 1957. During their field work, C.D. Schultz & Co. made inquiries from Seattle's watershed forestry department regarding hydrological studies conducted on the effects of roadbuilding and logging. The Schultz Co. briefly commented on a commission investigating logging in Seattle's watershed in the early 1940s:

Logging on the Cedar River Watershed commenced over 50 years ago and is still in progress. A controversy arose in 1943 as to whether logging should be permitted or not. A detailed examination by a commission concluded that with the type of topography, soils, forest cover, climate and other circumstances peculiar to the watershed, controlled logging should be continued.

In comparison, the Schultz Co. wrote that our watersheds have "rougher topography, poorer timber, and less favourable soil characteristics than the Cedar River Watershed but is suitable for controlled secondary use." And in examining some of the areas where the Capilano Timber Co. once strip-mined the Capilano they evaluated in chapter 5 that:

Investigations of the logged and/or burned areas in the Capilano Valley failed to show that erosion was appreciably increased by logging.

Lacking the necessary data, the Schultz Co. made the following vague and remarkable recommendation to the GVWD:

Managers of watersheds have been hampered by a lack of authoritative, quantitative measurement of the effects of forest management on water yield. Although data is meagre, research indicates that the perpetuation of a virgin forest cover is not the most satisfactory management policy for a watershed in this region. A study of hydrology indicates that under certain conditions, manipulation of the forest cover can improve the regimen of water yield. (Chapter 16)

A watershed research project should be organized in co-operation with the Department of Lands and Forests. The research project could be financed from the sale of timber from the watershed. (Chapter 14)

When their recommendation for a hydrological investigation is weighed against their immediate goal of a watershed logging program (Annual Allowable Cut) of 3.3 million cubic feet of forest per year, the merit and significance of a hydrology study becomes a mere window dressing, a facade.

In light of these former recommendations, the GVWD began a hydrological research project in 1968. The research was to be conducted by the University of British Columbia, Faculty of Forestry. Someone had decided that the Orchid Creek watershed, a sub-drainage of the upper western Seymour, should be chosen for the experiment and would last 10 years. In their 1968 annual watershed management review it was stated that:

This programme will be the first of its type in the humid B.C. coastal region and should establish guide lines for timber harvesting to lessen the chance of flooding and/or pollution of water courses that are rightfully or wrongfully commonly associated with timber harvesting.

In the annual review of 1969, another forester, F.F. Lloyd, commented on the Orchid Creek experiment:

The initial objectives of this study will be to determine the relationship between the amount of moisture falling into the watershed and the run-off which ends at the basin outlet. These relationships will be recorded on the virgin watershed for a period of three to five years, after which the watershed or portion of the area will be clear cut to determine its effect on the hydrological cycle.

On a provincial level, no one had ever scientifically documented what the effects of roadbuilding and clearcut logging had on the amount and frequency of erosion to soils and sedimentation loading to waterways on the coastal landforms of B.C. Such studies could have been crucial for roadbuilding and logging standards for every watershed in the province. But, in public drinking supplies such practices should be restricted. For many decades officials of course had understood, through observation and dialogue, what the effects of this were, but now statements had to be verified by science. And quite conveniently no one had the data to prove so. That is why Bill Angus retorted, in his critique of the Dean of Forestry's arguments for logging in the watersheds, earlier: "Why do they not prove their point in some area outside the watersheds first."

Another parallel test case began a few years later on the western coast of Vancouver Island, near the town of Bamfield - the Carnation Creek study. Beginning in 1971 the study was to monitor the watershed in its natural state for 5 years, to be followed by 5 years of roadbuilding and clearcut logging, and finally followed by 5 years of observation. The provincial Ministry of Forests and Environment, and the federal Department of Fisheries, were not only internally concerned about the vacancy of historical research and data, amidst the serious alteration of land and waterways from decades of forestry practices, but also about the public concern regarding an increase in the Annual Allowable cut in the province, coupled with companies seeking more isolated pockets of forest, and proposed mid to high elevation logging of mountain slopes. But at this point science wasn't about to interfere with the roadbuilding plans or clearcutting sites in our watersheds.

B. ROADBUILDING

From 1961 until the present, the GVWD began a long and expensive program of roadbuilding within the three watersheds. All told, just over 300 kilometres of roads have been built to this day. Apart from the tote road built in the 1930s for Hydro construction and access in the Capilano, and the main access road to the northern end of the new Seymour dam, there was no road network for the new forestry-minded department to clearcut the old-growth forest. The Coquitlam was the only unroaded watershed as mentioned in the 1967 annual review:

The Coquitlam drainage is currently really only accessible by boat, but the area will in time be opened up for management and made accessible.

Along with the exorbitant costs of road building was the laying of culverts, the construction and rebuilding of many bridges to accommodate the heavily laden logging trucks, and regular maintenance and upgrading of the roads. Millions upon millions of dollars have been spent to set up the road networks for the (mis-) management program. There have been no reports, from which I have seen, that detail the complete costs of road building, bridge work, culvert work, maintenance costs, etc., a very important subject which was not dealt with in the consultants' Report to the GVWD (see next chapter). Kelvin Higo, Chief Public Health Inspector, Environmental Health Division, for the Township of Richmond, stated (see Appendix C, submission #15):

The GVWD should be required to provide a financial statement as part of the report so that cost comparisons between logging activities in the watershed and other alternatives to reduce turbidity in the drinking water supply can be made.

Prior to 1979 the GVWD had no formal road standards, and after 1979 they were upgraded "to strengthen the control of construction procedures and minimize the potential for erosion and sedimentation." (Final Summary Report, page 42).



Erosion of road prism in the Capilano watershed, just above the Capilano River. Fine lacustrine silts and clays, that maintain long states of suspension (muddy water) released into the Capilano drinking reservoir.

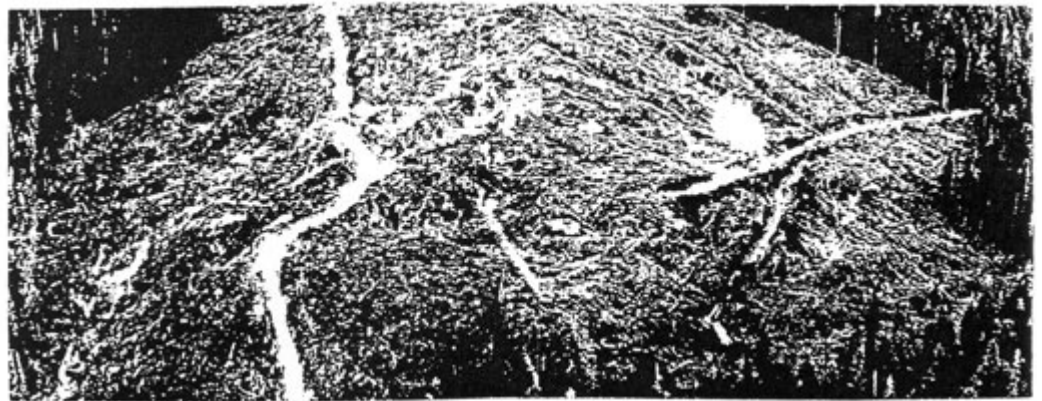
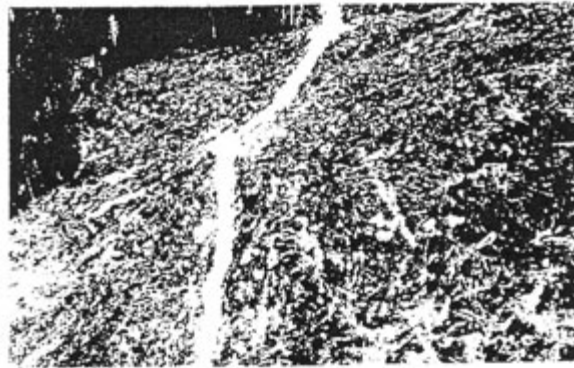
In the 1970's I was involved in studies in the Coquitlam and Capilano GVRD Watersheds. The road construction techniques I saw in those areas were no better than what I have seen in countless other watersheds. As your panel should have learned, it is this road construction that can cause a large percentage of sediment to enter local water courses. To argue that roads and logging are important to control insect attack and wildfire indicates some degree of a lack of common sense.

If disease and natural wildfire is so prevalent on the coast, why can one fly at anytime over our old growth forests along the coast and see little more than a virtual continuous forest of green? If natural wildfire is as prevalent as some would have us believe, why are the old growth stands so magnificent and most often 200 to 400 years old. Where on the coast do we have a high incidence of electrical storms which are the chief natural cause of wildfire? Should the insects and the wildfire have lived up to the expectations of the watershed experts, why are our old growth coastal forests not naturally maintained at a much younger age?

(Otto E. Langer, R.P. Bio., submission #93, Appendix C)



Photos from GVRD Library, Watershed files.



■ MUNRO: watershed "perfect"

C. CLEARCUTS (CUTBLOCKS)

It wasn't long before the fabricated program to rid the watersheds of the evil infestations became one of simply liquidating ("harvesting") the old- growth forest. The GVWD forestry department of course had been clearcutting all the trees in what is referred to as cutblocks, which included tree species unaffected by whatever infestations. They were not there to selectionly "salvage" the diseased trees - that went against the prevailing provincial mentality of efficiency by clearcutting. The idea was to reap the profits of all marketable tree species conveniently in the midst of the diseased cutblocks. Clearcutting was simply the introduction to the government's and industry's Multiple Use Management, the creation of a tree farm and an Annual Allowable Cut. This is not just my viewpoint but also shared by the recent review of the GVWD watershed management:

Pursuant to the Amending Indenture of 1967, a gradual shift has occurred from programs driven by salvaging of insect or diseased timber towards a sustained yield, production-oriented forest, creating the potential dilemma of weighing water quality risks against timber harvest and revenue generation. (*Final Summary Report*, GVWD, August 1991, page 27)

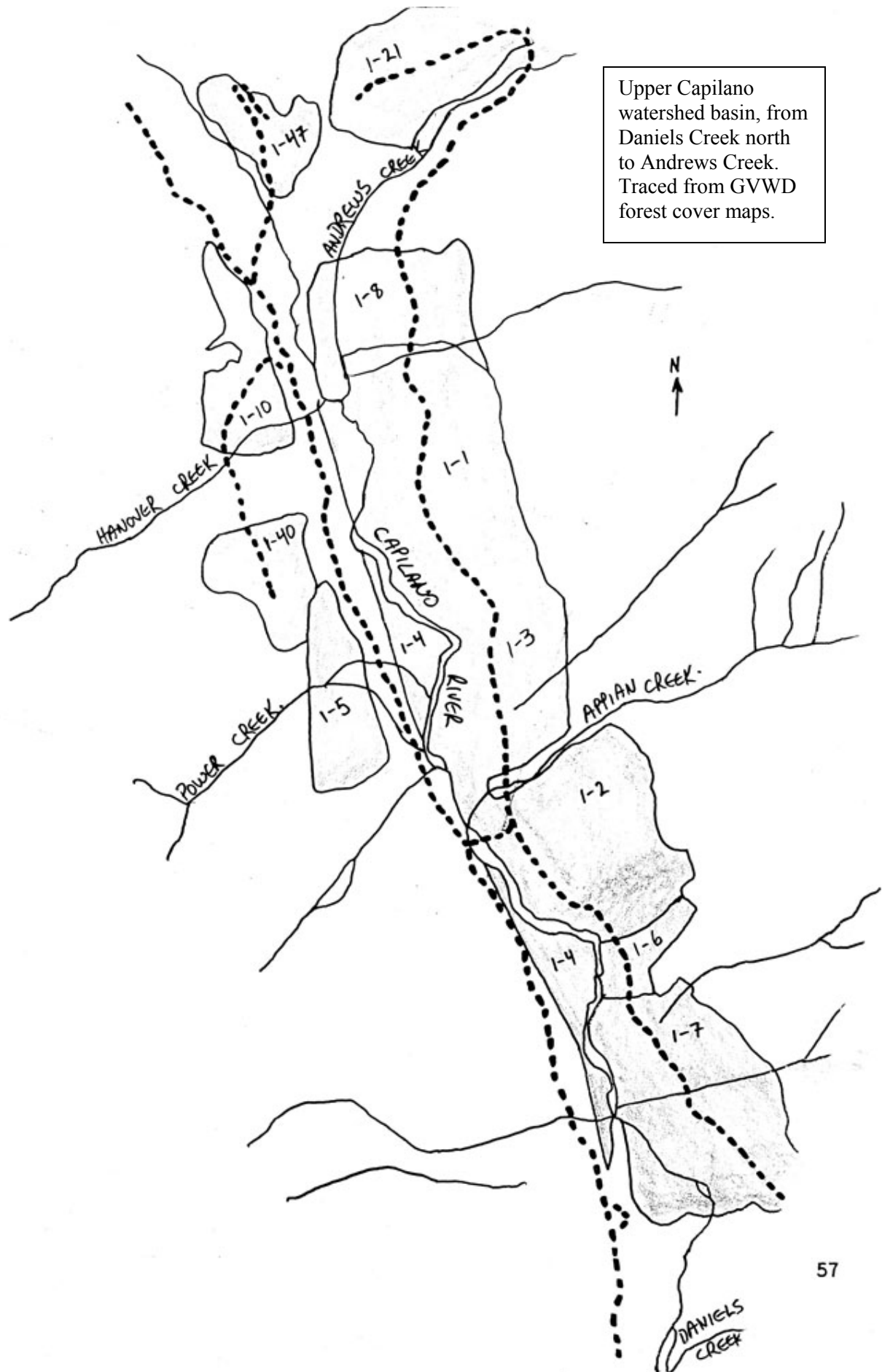
In 1968 a comprehensive forest inventory survey was conducted from contracted field work and by air photos provided by the Ministry of Forests. The inventory, completed by December 1969, provided mapping data of forest cover types which the Watershed Management Department still relies on today.

(i.) CAPILANO

Prior to entering the unroaded Coquitlam watershed, the GVWD began clearcutting in the Capilano and Seymour by using and extending the existing road network. By 1932 the Capilano Timber Co. had finished logging the upper Capilano to Daniels Creek, and the GVWD simply continued where they left off, by taking out the forest next to the Capilano River north to Andrews Creek. From 1964 to 1965 cutblocks 1-1, 1-2, 1-3, and 1-4 were completed, for a total of 107.7 hectares (266 acres). These cutblocks were linked together to form one continuous clearcut. By 1968, three more cutblocks 1-6, 1-7, 1-8, of 60.7 hectares (150 acres), were added on to this clearcut on the eastern side of the Capilano, for a total of 169 hectares (416 acres) in size. And so on.

(ii.) SEYMOUR

Most of the GVWD's "harvesting" strategy in the early game was concentrated in the Seymour. From 1961 to 1971 the GVWD clearcut 1,150.4 hectares (2,842.6 acres) in 56 cutblocks in the Seymour. The first cutblocks in 1961, 2-1, 2-2, and 2-3 formed another long clearcut, 78.9 hectares (195 acres) in size, from the western slopes of Hydraulic Creek northwards. In 1962 the GVWD tacked on 4 more cutblocks, 74.9 hectares (185 acres), which produced a 153.8 hectare (380 acre) clearcut. This sort of thing continued to occur on both sides of the lower Seymour, in what is now designated as the Seymour Demonstration Forest, or what should properly be coined the Seymour Demonstration Plantation. Similarly, north of the Seymour dam, in our water supply zone, the GVWD had cut one continuous swath of the old-growth on the eastern shore of the Seymour Reservoir. Cutblocks 2-28, 2-82, 2-86, 2-29, 2- 56, 2-51, 2-61, 2-30, 2-43, 2-13, 2-8, 2-14, 2-85, 2-81, 2-9, 2-32, 2-44, 2- 33, 2-23, 2-45, and 2-71, 365 hectares (902 acres) in length, form one continuous serpentine clearcut. In the upper Seymour, just southeast of the Seymour River/Balfour Creek fork, cutblock 2-49 was 57.9 hectares (143 acres), completed in 1970, the largest single cutblock in the Seymour. Later, in 1980, and additional cutblock 2-808 was added to 2-49, 34.4 hectares (85 acres), which extended halfway up the mountain slope.



This method of tacking on cutblocks to form a larger cutblock, is something which the GVWD has avoided mentioning in any of their recent reports and data. This is particularly important in light of their remarks concerning cutblock statistics, wherein assessments are made of cutblock size averages. For instance, the Watershed Management Department has recently concentrated on calming the public with statements that the average cutblock size, since 1985, is 8 hectares (19.8 acres). This is statistically correct, but to compensate for the reduction the GVWD merely increased the amount of cutblocks per year to make up the difference in their yearly total cut.

According to cutblock data from the Watershed Management Department, the average overall size, if calculated per cutblock since 1961, until the end of 1992, is actually 15 hectares (37 acres).

The average size of cutblocks since 1961 was 15.4 ha., decreasing to 10.4 ha. since 1980, and down to 8 ha since 1985. (*Final Summary Report*, page 17.)

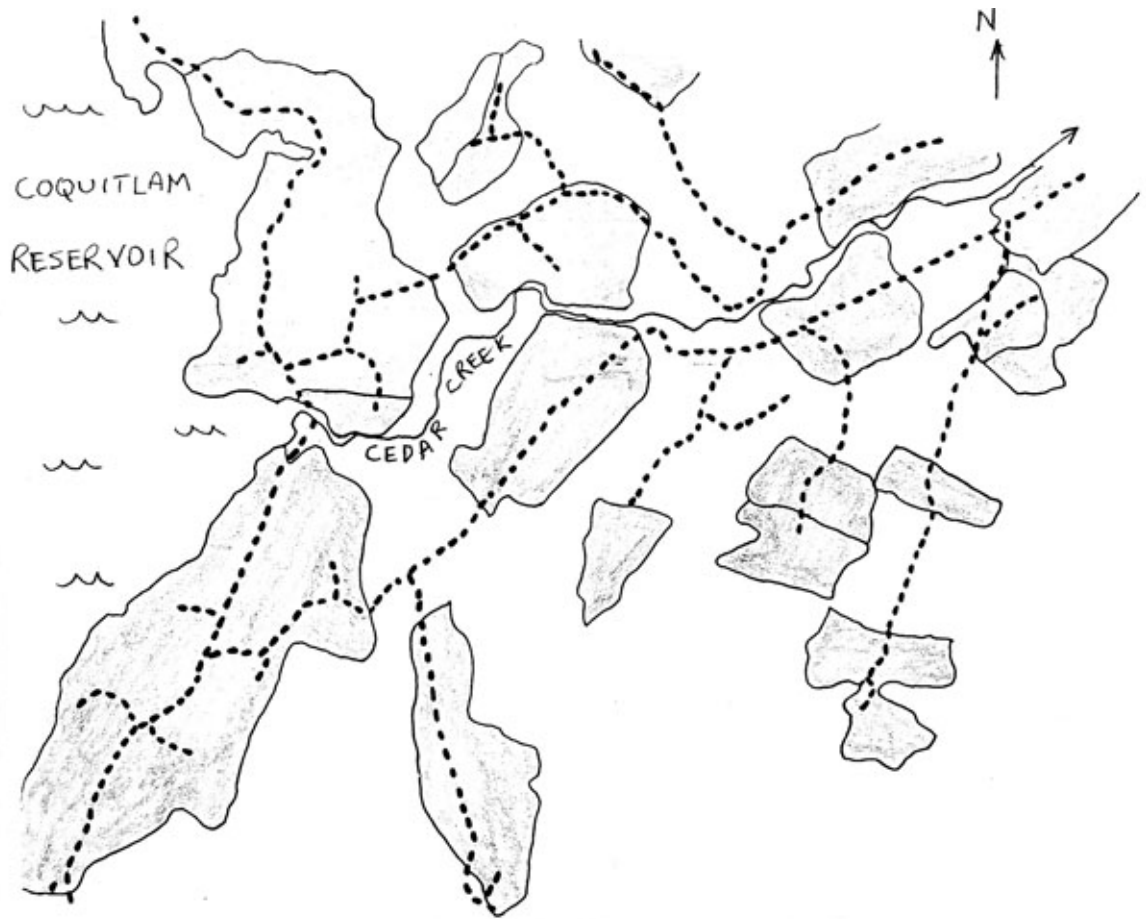
It seems utterly useless to talk about these statistical averages, because it is, in light of what I have tried to demonstrate, particularly misleading and uninformative. In this regard the statistical inferences regarding cutblocks in the watersheds must be properly reassessed.

(iii.) COQUITLAM

Until roadbuilding began in 1972, other than its southern most extremities, the Coquitlam was an untouched watershed. Its magnificent low elevation old-growth state was the last of its kind in existence in the Lower Mainland. Only 20 years ago was the Coquitlam still the GVRD's great prize, the greatest of its jewels, in light of its extent, pristine nature, its old- growth heritage, and water quality. That was a sad day, and the beginning of another great tragedy.

3-1, the first cutblock in the Coquitlam, situated around the mouth of Cedar Creek, was 116.2 hectares (287 acres) in size, the largest on record in the three watersheds. The next year, 1974, cutblock 3-3, 36.8 hectares (91 acres), was added on to it. And in relation to this area, northeastward up the Cedar Creek drainage, the GVWD clearcut an additional 334.4 hectares (826.3 acres), on cutblocks 3-2, 3-20, 3-40, 3-39, 3-44, 3-28, 3-16, 3-13, 3- 23, 3-9, 3-17, 3-14, 3-61, 3-10, 3-60, 3-11, 3-27, 3-19, 3-18, and 3-34. For statistics sake, the average cutblock size is 22.2 hectares (55 acres). And onward they pushed their logging roads, along steep hillsides and valleys in the Coquitlam.

In retrospect, the reader might ask why these practices were allowed to continue in a pristine watershed forest without any public scrutiny and political outcry. The main reason was that the public was not allowed access into the watersheds. That law was wisely legislated in the early 1920s as a protection measure, and now, oddly enough, it seemed to work to the advantage of the GVWD. Roadbuilding, logging, escaped slash burning fires, erosion problems, all continued without public scrutiny. The GVWD kept a close watch on events and things were hushed up. Even newspaper reporters and the media had a difficult time of it over the years. Other than some researchers and GVWD staff, the watersheds and their ancient forests are really a controlled and secret world. Despite their efforts to control the public, the GVWD couldn't hide the discoloration and sedimentation of the public's drinking supply, nor could they conceal the size and quality of the trees in the log sort, nor control the associated rumors.



Southeastern Coquitlam Watershed, lower portions of Cedar Creek. Traced from GVWD forest cover map.

10. 1991 AND THE FINAL SUMMARY REPORT

In early 1989 the GVWD initiated what their Draft Summary Report referred to as a “comprehensive assessment of its watershed policies and management programs.” One of the main reasons for the review, not referred to in their reports, was because of mounting health and public concern regarding logging activities and associated water quality problems in the watersheds.

Economic Engineering Services Inc. was hired by the GVWD to conduct the review. Gregory Kirmeyer was the Project Manager.

Mr. Kirmeyer has been instrumental in developing watershed management plans for Seattle Water Department, Tacoma Water Division, Bremerton Water Utility and the City of Everett. (Final Summary Report, Appendix B)

There were a total of four reports which were prepared by his firm, most of which, as stated in the report, were produced in cooperation with the U.B.C. Forestry Department, Jensen Consulting, Envirowest Consultants, Ltd., the B.C. Forest Service, and the Canadian Wildlife Service:

1. ***Technical Support Document***, 1990, “contains technical data on the natural resources and other uses, including wildlife, fisheries, research and rights of way.”
2. ***Draft Summary Report***, January 1991, (DSR) is a draft report which deals with policy review and a technical evaluation of “watershed management”. The Executive Summary, a short summary and less expensive version, was also published. The DSR was to provide a means for the public to interact with what an appointed Panel believed was the way of the future for the Greater Vancouver’s watersheds. The DSR was stormed with criticisms in the written and oral presentations at GVWD public meetings months later.
3. ***The Public Input Document***. These are minutes from two public meetings, March 7, and April 17, 1991, and the oral and written presentations at public meetings on the subject of water management, May 2nd and 3rd, 1991. Those briefs, and others submitted later, comprise the 109 written submissions and some oral submissions. Economic and Engineering Services evaluated the letters, briefs, and oral submissions in point form alongside the written briefs.
4. ***The Final Summary Report***, August 1991, (FSR). The FSR, which was a final version of the DSR, had some significant changes made to it, mostly as a result of criticism from the written submissions at the public meetings and those submitted later. One should always be wary of this fact when examining the FSR. Like the FSR, the Executive Summary, a shorter version, was circulated to the public.

10 (a) THE PANEL

The GVWD “appointed a Panel of technical experts to study current policies and prepare a report on its findings” (DSR). The criteria for their appointment was “based on their experience and background in conducting similar watershed cases or because of their specific knowledge of the GVWD resources” (DSR). The DSR also emphasized that this Panel was qualified as “independent” (page 2).

APPENDIX B

TECHNICAL WATERSHED REVIEW PANEL

The Watershed Panel was composed of eight technical specialists who met nineteen times during the course of the two year study to present findings and review results presented by other members. Three additional technical specialists also reviewed parts of the Panel's findings. The specialists were selected based on their experience and background in conducting reviews of similar watershed cases or because of their specific knowledge of the GVWD resources. The background and qualifications of these individuals are described below.

Gregory Kirmeyer, P.E., Project Manager and Water Quality Specialist, Economic and Engineering Services, Inc. Mr. Kirmeyer managed this study. He has a Master's Degree in Environmental Engineering and has 20 years of experience in the fields of water quality and water resources. He has specialized in drinking water quality from unfiltered municipal water sources similar to GVWD's. Mr. Kirmeyer has been instrumental in developing watershed management plans for Seattle Water Department, Tacoma Water Division, Bremerton Water Utility and the City of Everett.

Lee Odell, E.I.T., Water Quality Specialist, Economic and Engineering Services, Inc. Mr. Odell has a Master's Degree in Environmental Engineering and has 6 years of experience in water quality and water treatment. He has supervised operations at a water treatment plant and has conducted numerous water treatment studies including studies on disinfection and disinfection by-products.

Bill Carr, Ph.D., C.P.E.S.C., Forest Soils Specialist, Terrasol. Dr. Carr has a Doctorate of Philosophy Degree in Forestry and has 12 years of forestry related experience. He has specialized in forest soils and erosion control and has worked extensively throughout British Columbia. Dr. Carr helped to develop the soil erosion guidelines and procedures manual currently used by the Ministry of Forestry.

Peter Sanders, R.P.F., Silviculture Specialist, Jensen Consulting. Mr. Sanders holds a Master's Degree in Forestry and has over 30 years of experience in the fields of forestry and silviculture. He currently heads silviculture operations at the U.B.C. Research Forest in Maple Ridge and has extensive knowledge of the GVWD watershed resources. Mr. Sanders has conducted several research studies within the GVWD watersheds and has documented silvicultural prescriptions for the watersheds in the past.

Doug Golding, Ph.D., R.P.F., Forest Hydrology Specialist, U.B.C. Faculty of Forestry. Dr. Golding has a Doctorate of Philosophy Degree in Forestry and is currently an Associate Professor with the University of British Columbia Faculty of Forestry. He has 37 years of experience in the fields of forestry and forest hydrology. Dr. Golding has conducted extensive research on the impacts of timber harvesting on forest hydrology, including over ten years of work within the GVWD watersheds.

Dale Seip, Ph.D., Wildlife Specialist, B.C. Forest Service. Dr. Seip holds a Ph.D. in Forestry and has 10 years of experience in studying forestry/wildlife interactions. He currently is a wildlife habitat ecologist with the B.C. Forest Service and an adjunct professor of Forestry at U.B.C. Dr. Seip has studied the effects of forest management practices on wildlife species including mountain sheep, caribou and moose. He currently is studying wildlife diversity in coastal forests, including study areas in the GVWD watersheds.

Jean Pierre Savard, Ph.D., Wildlife Specialist, Canadian Wildlife Service. Dr. Savard has a Doctorate of Philosophy degree in Zoology and has over 14 years of experience in the fields of ornithology and ecology. He is currently a research scientist for the Canadian Wildlife Service and carries out research on forest and grassland ecosystems. Current research include the comparison of bird populations of old growth and second growth forests and a study of the breeding distribution of Marbled Murrelet and Long-billed Curlew.

Ian Whyte, Fisheries Specialist, ECL, Envirowest Consultants. Mr. Whyte has a Bachelor's Degree in Science and has 10 years of experience in aquatic resources management. He has performed numerous fisheries investigations throughout the Pacific Northwest, and recently co-authored a manual on fish habitat enhancement techniques for the Department of Fisheries and Oceans.

Other Reviewers

I.P. (Hamish) Kimmins. Department of Forest Science, Faculty of Forestry, University of British Columbia.

Karel Klinka, Ph.D. RPF Department of Forest Sciences, Faculty of Forestry, University of British Columbia.

Robert Laird, M.Sc., P.Ag. Consultant in Resource Management - Science.

According to the DSR there were two study objectives for the audit:

- (1) Evaluate the existing Watershed Management Program in light of its current mandates and administration, and
- (2) Identify existing impediments associated with watershed policies and operations, and recommend changes to improve the Watershed Management Program.

The scope of the Panel's investigation:

... included assessments of all aspects of the watershed program including administration, forest and vegetation cover management, access development, watershed control and security, wildlife, fisheries, education, recreation, and special uses such as rights of way.... the primary concerns were (1) watershed control and security, (2) access development within the watersheds, and (3) forest and vegetation cover management....

To conduct a thorough and proper audit on the history and management of the Greater Vancouver Watersheds, on what is understood as a vital and controversial subject, the importance of having an independent and qualified Panel cannot be underestimated. In some of the written submissions in May of 1991, the question of the independent nature of the Panel and the audit was raised. As such, there were some who unquestionably praised the independence and technical experience of all the Panel members, the thorough manner in which the Panel investigated the complexities involved, and gave complete support of the Panel's recommendations to the GVWD. On the other hand, there were also some submissions which objected to certain findings, conclusions, recommendations, and also questioned the legitimate independence of some of the Panel members.

On the topic of independent Panel members, there was some unwritten external concern raised whether Dr. Bill Carr, Forest Soils Specialist, was in a conflict of interest. Dr. Carr is with the firm Terrasol. For 3 years since 1988, Terrasol had unsuccessfully bid on a hydroseeding contract in the watersheds. In 1991 they were awarded a \$26,108.93 contract to hydroseed.

GVWD has recently begun hydroseeding the exposed banks along roads to reduce erosion potential. The hydroseed mix contains fertilizers to enhance growth of vegetation.... (FSR, page 21)

The argument has been made that Dr. Carr's recommendations may be influenced due to the awarding of present and future contracts.

There have been similar concerns regarding another Panel member, Doug Golding, UBC Forest Hydrology Specialist. Golding conducted the hydrological research project on Orchid Creek drainage basin since 1970 (to be discussed later - section "h"). As such, Golding wrote a number of reports over the years. Based upon his approach, Golding supports the continuation of a roadbuilding and logging program in the watersheds. Should Golding, as a Panel member, be evaluating his own research? For that matter, how could he be objective in critically reviewing published data which contradict some of his own conclusions?

In contrast to the DSR, it is both amusing and instructive to note that the FSR, after reviewing the written submissions, excluded mentioning the word "independent" as a qualified description of the Panel members:

The study was conducted by a Panel of () technical experts. (page 1.)

It seems, therefore, that whoever actually wrote the FSR (not identified in the report) was conscious of the un-independent nature of some of the Panel. If such is the case, then there are grounds for questioning some of the conclusions, recommendations, and "consensus" data in the report.

10 (b) TO REACT OR NOT TO REACT (IS THAT THE QUESTION?)

The Final Summary Report categorized the recent 120 year history of the watersheds into 5 periods, the final two of which formed the foundation, structure, and criteria of the Panel's recommendations:

1. 1870s to early 1900s - generally unrestricted resource use
2. 1900s to late 1920s - contrasting views on resource use
3. Late 1920s to 1935 - transition to closed watersheds
4. 1936 to 1961 - reactive watershed management
5. 1961 to present - proactive forest management

The origin of these categorizations come from an interesting pamphlet, *The Seymour River Valley - 1870's to 1890's, A History of Resource Use*, written by Gabrielle Kahrer in 1989 for the Greater Vancouver Regional Parks Department. Kahrer was hired because of a recent research paper she wrote at U.B.C. on the history of logging on the North Shore. Her M.A. thesis, *Logging and Landscape Change on the North Shore of Burrard Inlet, British Columbia, 1860's to 1930's*, was completed in 1988.

In her GVRD study Kahrer had grouped the Seymour history into the exact time categories which the FSR conveniently borrowed. Nowhere is Kahrer credited as the source of this influence in their report, though included in the FSR bibliography. I consider this omission unethical, because the illusion is portrayed that the Panel had a grasp of the history. Unfortunately, time periods 3 and 4 are incorrect for the Capilano and Coquitlam watersheds - they took Kahrer's Seymour history outline to represent the other watersheds without checking the details. Yet what is of particular interest here is how the FSR re-worded the last two adopted time period categories from Kahrer.

GREATER VANCOUVER WATER DISTRICT
PANEL'S ALTERNATIVE EVALUATION RATING AVERAGES

25 JULY 1990

PANEL'S AVERAGE RATING

EVALUATION CRITERIA/QUESTION	POSSIBLE PTS	ALTERNATIVE			
		#1	#2	#3	#4
I. GENERAL AND LEGAL					
1) IS THE ALTERNATIVE CONSISTENT WITH THE OVERALL MISSION OF THE GVWD?	10	5.6	8.7	8.5	3.3
2) IS THE ALTERNATIVE CONSISTENT WITH ALL OF THE CONSTRAINTS CURRENTLY PLACED ON THE WATERSHEDS?	5	2.2	4	4.2	1.3
II. WATER QUALITY AND HYDROLOGIC REGIME					
1) IS THE ALTERNATIVE CONSISTENT WITH MAINTAINING A HIGH MICROBIOLOGICAL QUALITY IN THE SOURCE WATERS?	10	7	8.2	8.4	6
2) IS THE ALTERNATIVE CONSISTENT WITH MAINTAINING A HIGH PHYSICAL QUALITY IN THE SOURCE WATERS?	10	6.7	7	8.5	4.7
3) IS THE ALTERNATIVE CONSISTENT WITH MAINTAINING A HIGH CHEMICAL QUALITY IN THE SOURCE WATERS?	8	5.7	7.2	7.2	2.8
4) IS THE ALTERNATIVE CONSISTENT WITH MAINTAINING POSITIVE OR MINIMAL IMPACTS ON THE HYDROLOGIC REGIME?	7	7	7	6.5	4.3
III. NATURAL RESOURCES					
1) WILL THE ALTERNATIVE PROVIDE PROTECTION OF THE FOREST FROM FIRE, INSECTS, DISEASE, ETC?	15	5.3	9.8	13.5	12.5
2) WILL THE ALTERNATIVE PROVIDE PROTECTION OF REPRESENTATIVE EXAMPLES OF OLD-GROWTH ECOSYSTEM TYPES?	5	4.5	4.7	4.4	2
3) WILL THE ALTERNATIVE PROVIDE A WIDE DISTRIBUTION OF FOREST ECOSYSTEM TYPES IN THE WATERSHEDS?	10	4.7	5.5	9.1	6.2
4) WILL THE ALTERNATIVE PROVIDE MAXIMUM SPECIES DIVERSITY AND ABUNDANCE OF WILDLIFE?	5	2.6	3	4.6	2.5
5) WILL THE ALTERNATIVE PROVIDE FOR AN ABUNDANCE OF FISH AND QUALITY FISH HABITAT?	5	4.2	4	4.1	2.5
TOTAL POINTS	90 POINTS MAXIMUM	55.5	69.1	79.0	48.1
IV. SUMMARY					
TOTAL PERCENT	100% MAXIMUM	62	77	88	53
RANKING: #1 MOST DESIRABLE, #4 LEAST DESIRABLE		3	2	1	4

NOTES:

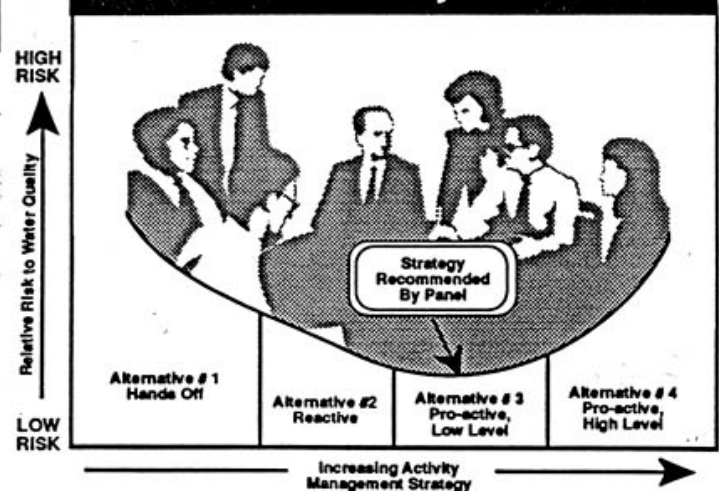
ALTERNATIVE #1 IS "HANDS OFF" MANAGEMENT, ALTERNATIVE #2 IS A REACTIVE MANAGEMENT, ALTERNATIVE #3 IS LOW-LEVEL PROACTIVE MANAGEMENT, ALTERNATIVE #4 IS HIGH-LEVEL PROACTIVE MANAGEMENT. ALTERNATIVES WERE RATED BY THE FOLLOWING PANEL MEMBERS: CARR, GOLDING, SANDERS, KIRMEYER, ODELL, WHYTE, AND SEIP. ALTERNATIVE #3 IS A COMBINATION OF THREE LOW-LEVEL PROACTIVE ALTERNATIVES RATED BY THE PANEL. MAXIMUM POSSIBLE POINTS ARE LISTED FOR EACH QUESTION. BENEFICIAL, AFFIRMATIVE, OR POSITIVE RESPONSES RECEIVE A HIGH NUMBER OF POINTS.

Table S-16
Technical Panel's Ranking of Alternatives

Alternative	Panel's Avg. Rating out of 100%*	Rank
#3, Pro-active, Low Level	88	1 — Most Desirable
#2, Reactive	77	2
#1, Hands Off	62	3
#4, Pro-active, High Level	53	4 — Least Desirable

*Note: 100% is the highest and most desirable.

Exhibit S - 12
Management Strategies and Relative Water Quality Risks



On page 48 of her Seymour study, Kahrer wrote that at a certain time in the mid 1930s, “the GVWD was beginning to manage the timber resources in the Seymour watershed in a reactionary manner.”

After re-reading Kahrer’s study, and thinking twice about this sentence, I had a wild hunch that someone had used it for the Summary Reports. My hunch was unexpectedly confirmed in a conversation with Gregory Kirmeyer. While perusing Kahrer’s study, Gregory Kirmeyer picked up on this word “reactionary” and used the base of this word as the key for defining the early period of GVWD administration, hence “reactive”. “Proactive” was then cunningly taken to symbolize the period when the GVWD began roadbuilding and clearcutting in the watersheds.

But through whose eyes was the decision not to allow logging and mining development in the watersheds seen as “reactionary”? This is the very point of contention here, as the term “react” intentionally bears a negative connotation, as if someone were not in control of their faculties. The implication from the FSR is that the early GVWD administrators were extremists:

...forest management was mostly reactive in nature. No commercial timber harvesting occurred during this period and the forests were left on their own. (FSR, page 13)

Remember the words of Commissioner Berry, from Leiterman’s suppressed stories in 1953, who was steadily pressured by the forest industry:

There are 600,000 people getting their water off those slopes and some day there may be 1,250,000. It would be a great pity to take chances. “Some day,” he concluded, “the people will thank those of us who today may be considered fanatical in our desire to protect the watershed.”

The FSR refers to the years previous to the sudden insect invasion and the logging program of 1961 as “reactive”, “passive”, “hands off” in terms of the present “proactive forest management” program. The language intentionally conveys a justification for present watershed logging administration against the earlier administration with its policy of no logging. That is how the FSR synthesized the formation and early history of the GVWD and their protection of our watersheds. And the amazing thing is that these designations were being wittingly and unwittingly used by certain readers to further the concept of a continued logging and roadbuilding program, as seen in the written presentations in Appendix C. The opposite was once true, when those whose interests were to exploit the watersheds “reacted” to the concerns of the Health Department, governmental officials, and the public.

The method of determining how the Panel should approach their audit was done by each assessing the merits of four possible alternatives, as seen here on page 71 - the data and charts from the FSR. This method, similar to a row of judges at a competition, the Panel members said that alternative #3 is the most responsible, the best strategy for GVWD “stewardship” (FSR, page ES1). The FSR (page 72) states that the Panel “unanimously” recommended this option. But the data from Table S-16, based on the percentage of Panel votes, indicates that the vote wasn’t “unanimous”. I suppose what the commenter meant was that because the average percentage was the highest for option #3 the Panel then must have made a unanimous decision based on that. The data also indicates that the “reactionary” alternative #2 came pretty close to being “unanimous.”

Then, under the guise of “proactive” management, the Panel formulated the following definition of “watershed management”:

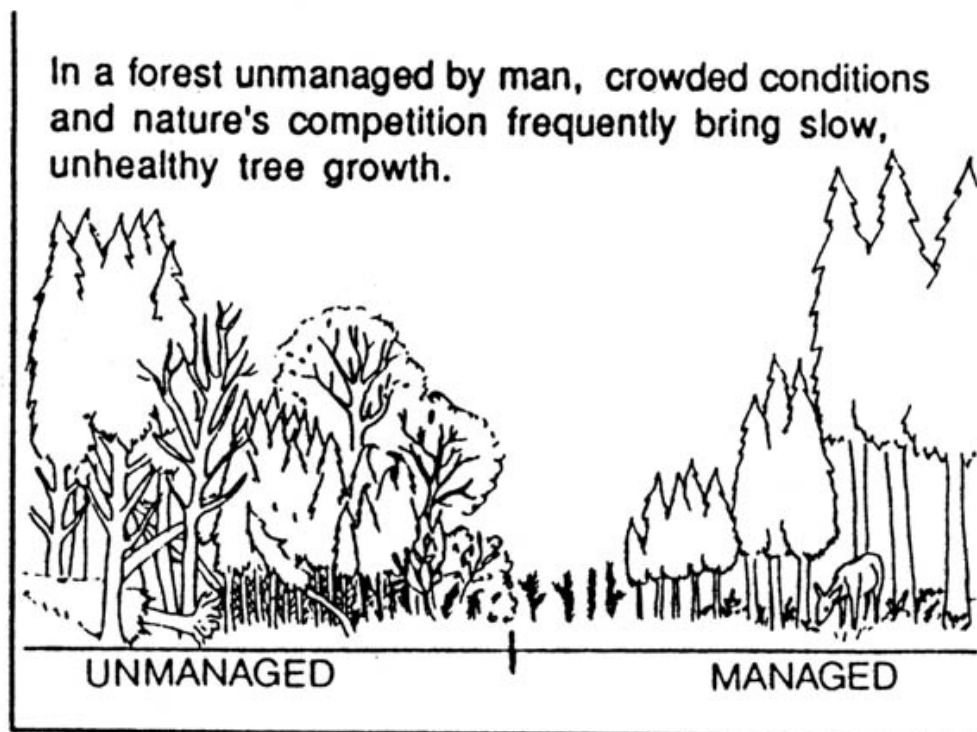
The management of natural resources of a drainage basin primarily for the production and protection of water supplies, including maintenance of a stable forest and vegetation cover, control of erosion and floods, and the protection of health and aesthetic values associated with drinking water. (FSR, page 2)

10 (c) REDEFINING THE OLD-GROWTH FOREST

Foresters and participants in government and industry, have associated the old-growth forests with a variety of nicknames. For instance, the old- growth “virgin” “timber” is described as “mature”, “over-mature”, “decadent”, “over-ripe”, “rotting at the stump”, “timber dead and dying”, and if it is left “unmanaged” it will simply continue to be one “cellulose cemetery”. And so, one of the main arguments that foresters have made time and time again to “manage” an area is embodied in their choice of language. Forests lost their source of mystery, wonder, and biological significance as the womb of life, and merely became insufferable economic objects, sometimes even called “garbage”. And when the DSR was published, it included some of this language to describe the watershed forests. Some of the written submissions criticized the DSR for doing so:

“Old growth” forest was considered by the Panel as “overmature”, “decadent”, and “subject to natural decline”. These opinions, which have been used to justify current commercial logging practices in B.C., are widely disputed by many progressive forest ecologists as well as many professional foresters, including some at the UBC Faculty of Forestry. (Bruce P. Brandhorst, #99)

These are the words of lumber barons who can see only the wood products and not the living forest. Such statements indicate that the GVWD Panel, as presently constituted, does not fully appreciate the ecological complexity of old growth nor does it appear to understand the benefits to man provided by these ancient forests. (Elaine Golds, #42)



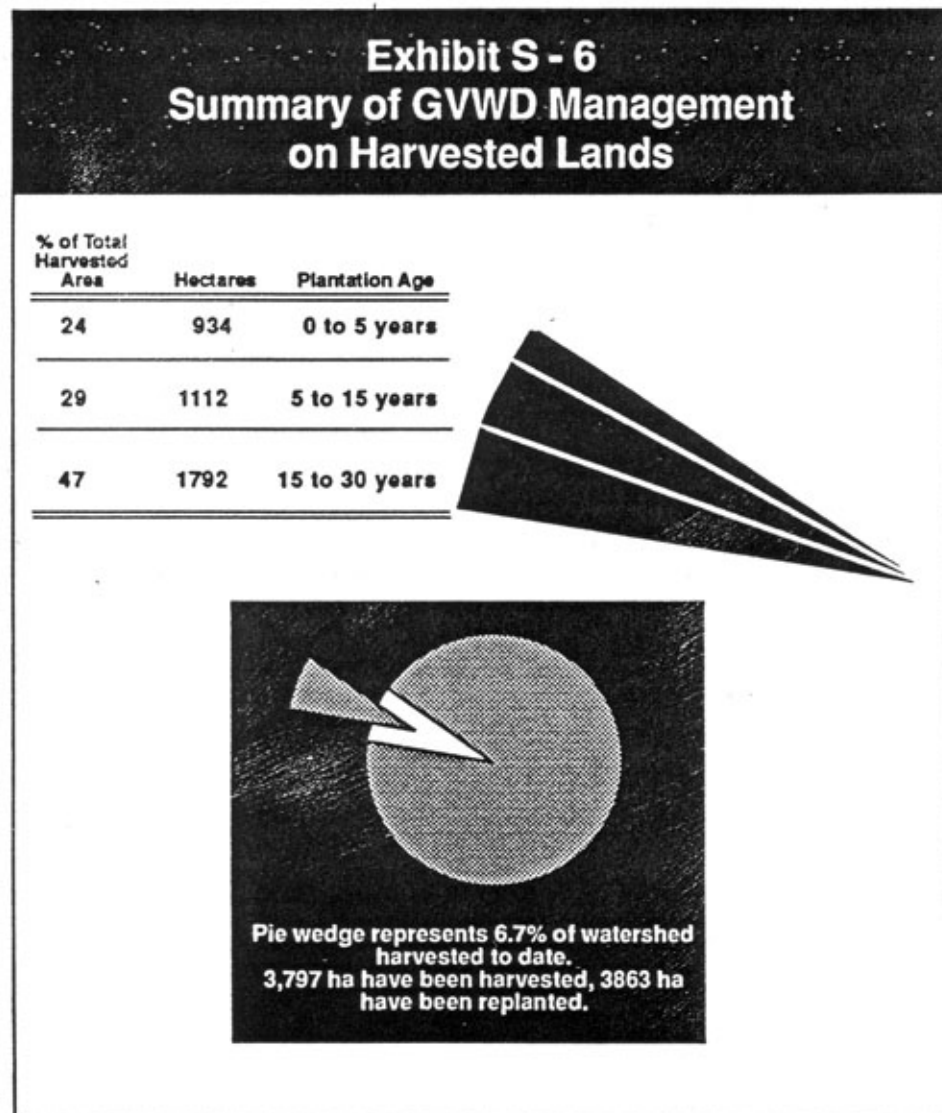
From Seymour Demonstration Forest/Plantation public pamphlet propaganda.

Upon reflection, the FSR admitted that its original choice of language was biased and they made a profound and appropriate change to language which has become deeply entrenched in our society.

The tone of the report has also been changed to remove words or phrases that did not necessarily appropriately portray the condition of the forests. Examples of this are replacing the phrases “mature and overmature” or “decadent” with the phrases “old growth” or “older timber” when referring to certain ages of timber. (Page 5)

10 (d) MISLEADING STATISTICS

In 30 years of active management, an estimated 6.7% of the watershed area has been harvested. This is considered a very conservative program by industry standards, and more suitable for meeting watershed management objectives. (FSR, page 30)



In the face of this quotation, it is hard not to be persuaded and impressed that very little of the three watersheds in the GVWD have actually been clearcut since 1961. In that sense, whoever contrived to write this in the FSR was successful in conveying a false impression. The FSR either forgot to include relevant information or intentionally misrepresented the facts. Allow me to explain.

The total land base of the three watersheds is roughly 57,971 hectares (143,246 acres). The FSR states the total amount of hectares logged by the end of 1990, some 3,796.9 hectares (9,382 acres), that this represents 6.7% of the total area. That's true. But, according to the ATCS permissible Forest Management Area (see section 10-f), the GVWD is only allowed to log in a 22,337 hectare (55,195 acre) zone for all three watersheds. So if the relevant figure is substituted for the total land base, then 17% of the ATCS permissible zone has already been logged. But that is not the end of it.

The Schultz Co. report included figures of lands already logged up until the early 1930s in the watersheds. These figures should be included if we want to understand what has already been cut in the recent past. About 3,506 hectares (8,663 acres) were logged and also suffered resultant fire damage in the Capilano pre-1934. About 1,424 hectares (3,519 acres) were logged in the Seymour, pre-1936. About 1,248 hectares (3,084 acres) were logged in the southern extremity of the Coquitlam pre-1940. If these figures are added up and combined to the areas logged after 1961, then 9,974.9 hectares (24,648 acres) have been logged in the watersheds since the mid 1910's to the end of 1990. Therefore, from the ATCS permissible zone 44.7% of the watersheds have been logged.

There are yet three more considerations before we finally come up with a workable statistic. Firstly, the FSR did not include the area removed from forested land because of roadbuilding. That was confirmed in a conversation with a staff member of the GVWD in January 1992. Just over 300 kilometres of road have been built, with an average right of way of 66 feet, which works out to be roughly 600 hectares. If this amount is added to the overall figure of areas logged, then it inches up to 10,574.9 hectares (26,131 acres), 47.3% of the permissible area.

Secondly, the FSR recommended that the ATCS permissible forest management area be reduced, in light of criticisms from expert analysis (see section "F", ATCS). If that is the case, then the 22,337 hectare permissible area will be reduced, thereby increasing the 47.3% figure arrived at.

Thirdly, the FSR did not discuss nor include areas proposed for Ecological Reserves. Professor Karel Klinka had proposed a number of reserves in the Seymour and Coquitlam watersheds, and I'm not certain if any were proposed for the Capilano. In any event, these areas should have been included in determining the correct reduced figure for the ATCS permissible forest management zone. In that case, the overall percentage figure will rise even higher.

There is yet another more complicated consideration. It can be argued that two areas, namely the Seymour Demonstration Forest and the Or Creek (formerly Gold Creek) drainage in the southeast Coquitlam, could be excluded from the overall logging estimates and statistical conclusions. The reason for this is that they lie outside of the water supply zones in the Seymour and Coquitlam watersheds. They are now actually "reserve" zones, in case they are needed for future water supply considerations. If these areas are excluded from the total watershed figures just discussed, and someone took the time to reinvestigate the data, the resultant figures could be significantly different, in either direction.

10 (e) INSECTS, DISEASE, AND THE CATASTROPHIC FIRE CON

If you don't cut timber when it's mature, it succumbs to fire, decadence or disease. (George Allen, Dean of U.B.C. Forestry.)

The present forest management strategy employed by the GVWD seeks to develop, where feasible, a more diverse, multi-aged forest that is healthier and better able to resist insects, disease and fire than an unmanaged stand. To achieve this healthier forest, the GVWD is converting selected forest stands through a long term program into managed stands with a balanced distribution of age classes and a diverse species mix. (FSR, page 22)

Large areas of mature and overmature forests (are) rapidly becoming decadent. The fact that we have not suffered extensive fire loss in the watersheds during the last 30 years, should not lull us into complacency. (F.G. Johnson.)

When F.G. Johnson sent in his proposal, he tried to persuade the GVWD Commissioner that the forests in the watersheds needed to be modified so that the public's drinking supply would not be at risk from fire. In the three watersheds under the control of the GVWD prior to Johnson's proposal, there occurred only 3 small fires in the watersheds, which were all quickly controlled. Johnson neglected to mention that the forests have been there and functioning for centuries before he drummed up his conclusions. Of course any one who understood why Johnson wrote what he did, one month after Cleveland died, was to fool the GVWD to believe there was a reason for logging the protected forests.

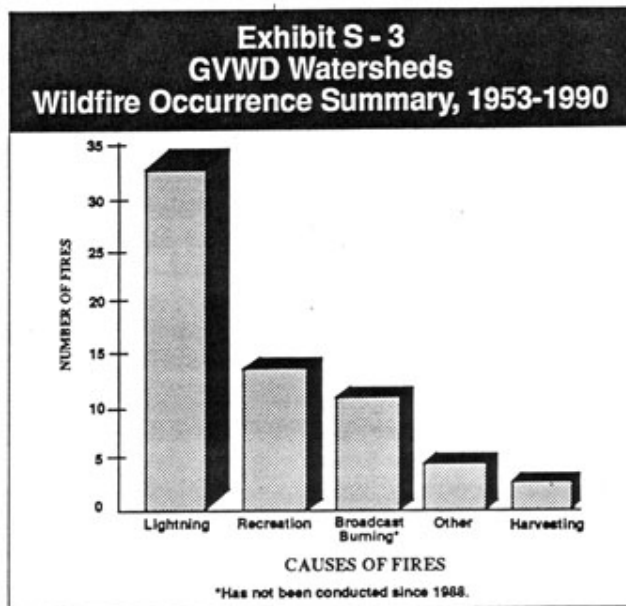
A few years later, that is exactly what the Schultz Co. endeavored to do - to fabricate enough reasons to introduce a reversal in watershed policy. They said that there was an extremely high risk factor for a fire in the watersheds if the "decadent" forest, which was decaying and dying from disease, was not "managed" properly:

To date, the timber stands in the Watershed have lost a greater volume of wood to insect and disease attacks than has been destroyed by fire. It is not economically feasible to control diseases in the present stands. Pathologically, the best forest management policy would be to harvest the present stands of overmature timber and encourage the growth of even-aged stands of young trees. (Schultz Co. Report, chapter 12)

The Schultz Co. and the FSR forgot that, outside of an extremely unusual and prolonged dry climatic condition, the biggest threat of fire in the watersheds was from people. The Capilano Timber Co. caused 37 fires in the Capilano, from 1918 - 1933, the largest of which was over 3200 acres in extent. The FSR did not include this important information in their statistics and tables, nor did the Schultz Co. put it in perspective. The FSR did, however, comment on the number of escaped fires from "controlled" slash debris burning by the GVWD on their cutblocks alongside their fire roads after 1961, where a total of 85.9 ha (212 acres) of old-growth forest were burned.

The two charts shown here from the FSR (page 77) tell us two different stories. One is of information from 1900 to the present, and the other from 1953 to the present.

According to Michael Feller, U.B.C. Faculty of Forestry professor, 94% of all fires in the watersheds this century were started by people. Nevertheless, when logging began, the assumption of fire risk from lightning striking the diseased old-growth became slowly imbedded in the GVWD, despite the dangers from roadbuilding and logging which the GVWD once denounced. E.g.:



Appendix A
Watershed Fires 1900 to Present
Summary of Fire History – Damage and Causes

Period	Causes			
	Lightning	Logging/Escaped Slashburns	Recreation	Other and Unknown
1900–1919	109 ha	–	–	–
1920–1929	–	–	–	612 ha
1930–1949	82 ha	–	–	–
1950–1959	0.1 ha	–	–	2.4 ha
1960–1969	1.0 ha	34.3 ha	0.2 ha	–
1970–1979	0.1 ha	48.3 ha	0.2 ha	0.1 ha
1980–1990	4.4 ha	3.3 ha	0.4 ha	0.4 ha
Total	196.6 ha	85.9 ha	0.8 ha	614.9 ha

Snags or the standing remnants of the infected trees will create a serious fire hazard.... and the effects of soil erosion and run-off due to fires will be far more serious than if the land had been clear cut. (GVWD Minutes, July 21, 1961)

Insect problems are the primary reason for the existence of the Amending Indenture and an active forest management program today. (FSR, page 46)

Forest fire management is the underlying basis for the GVWD's forest management program. (FSR, page 50)

A major objective of the GVWD road system is to provide access to enable detection and suppression of forest fires. (FSR, page 42)

The *Final Summary Report* supports the “management” of the forests in the watersheds because of a new argument - the threat of a catastrophic fire event. From fire history field work in the forests of the northwestern State of Washington into British Columbia, it is assumed that a rather large catastrophic fire swept through these areas almost 500 years ago. It is assumed that this fire was the result of an unusually dry period, the result of which blackened the heavens and scorched the earth. (Perhaps it was also an omen of the catastrophic colonial invasion.) It is inferred that because this event happened 500 years ago that it is likely to become the result of a regular climatic condition.

Given the probable high fuel loads in portions of the watersheds, it is only a matter of time until the right combination of weather and fire source meet to create a catastrophic fire. Although this will be a rare event - possibly once in 500 years - the chance is not zero and the impacts on water quality will be significant. (FSR, page 11)

Although there can be no guarantee that a catastrophic fire will not occur, every hectare of reduced fuels decreases the probability and extent of catastrophic fire. (FSR, page 50)

The question - how can anyone possibly stop a catastrophic fire? - is rebutted by suggesting that we could control the degree of it by removing fallen debris (high fuel loads) on the forest floor which

might ignite and further intensify the expanding catastrophe. In that case, instead of cutting down the old-growth to do so, perhaps it would be better just to remove or scatter this fallen debris, if it is such an enormous concern.

But perhaps by so-called management of our watersheds, we could in fact be supporting a minor catastrophic event, such as the Capilano Timber Co managed to do. A number of things support such a view. Firstly, these “young and thrifty” plantations in the cutblocks are a greater potential of fire than the old-growth. Their spatial proximity and tight crowns, and lack of internal moisture, are welcome mats for fires to swiftly sweep along.

The finding that old-growth forests present a higher fire risk than managed forests is most unusual and is not supported by available data or current fire behaviour models. The greatest potential for crown fires actually occurs during and just after the period when the tree crowns begin to meet - probably when a forest in the watershed is 30-60 years old. (Michael Feller, submission #57)

Secondly, slash, which has been left on the cutblock sites from the chainsaws are subject to drying because of the sun’s penetration, and are much drier than the naturally falling limbs and decaying trees on the ground amidst the moist old-growth forest. Thirdly, there a number of sites in the watersheds where the GVWD have been “commercially thinning” their plantations and early century logging sites. The debris from small trees cut down and the thinning of limbs are still resting, sometimes hip high, on the ground and are an open invitation for disaster. These are seemingly contradictory arguments amidst the theories for clearcutting the old-growth in our watersheds for the prevention of a catastrophic fire:

Within the watersheds this (risk) is directed at the conversion of the forest cover to a more stable, fire-resistant condition while maintaining the hydrologic conditions necessary for the continuous production of high water quality. (FSR, page 50)

Forest fires have had major impacts on the vegetation and forest cover in the watersheds and represent the largest overall risk to long term water quality. (FSR, page 10)

Overall, the so-called “pro-active” “risks” of roadbuilding and clearcutting to remove the “risk” of the predicted theoretical catastrophic 500 year or so fire cycle have only supported and amplified the disturbance in our watersheds, and become the crafty and subtle arguments for the continued program to “liquidate” the old-growth forests, the “planned stand manipulation strategy” (FSR, page 26).

The watersheds never experienced a total catastrophic fire. Natural fires occurred in isolated pockets. And those fires actually provided a healthy future for the next fated seedlings and other processes. Recently, on the GVWD’s ecological consultant’s stated that he found no evidence in the Watersheds, above the 2000 foot level, of any fire history. I think it is time that we had more honest, diligent, and scientific research of the old- growth, and the accompanying insights and knowledge we may gain from it in our watersheds and conclusions. It is an opportunity we cannot afford to lose.

On the subject of insects and disease, the following are excerpts from Michael Feller’s (Associate Professor of U.B.C. faculty of Forestry), critique of the Draft Summary Report, his written submission to the GVWD’s public forum of May 1991.

No data are presented for destruction of forests by disease in the watersheds. The diseases mentioned on p.40 of the summary report [root and butt rot, “decay in mature forests” and

The week after Ben Parfitt's article in the Georgia Straight (see Appendix D), Rob Kyle, a professional forester, had his letter to the editor published. Rob Kyle, a member of the Association of B.C. Professional Foresters' Vancouver Regional Public Affairs Committee (see Appendix C, #37), has been busy writing similar letters for quite a while in our local newspapers. Amongst Kyle's statistical errors (see section 10-d), he describes the forests as riddled with tapeworms.

Forester Sees Logging as Means to an End

Reading Ben Parfitt's article on Will Koop and the Greater Vancouver watershed ["Is Logging Threatening Our Water?", March 12-19], one might get the impression that loggers are stripping the watershed. Here's a few statistics to add some perspective to his story.

Since logging began again in 1962, about 6.7 percent, or 3,863 hectares of

available for logging, 38 percent of the area that Kyle bases his calculations on. If the 22,300-hectare figure is used, then 17.2 percent of the accessible old-growth trees have been logged in the last 30 years. More importantly, if one adds the 6,178 hectares of forest clearcut in the watersheds prior to 1961, then 44.9 percent of the old-growth trees that are economically feasible to log have been cut. It is the future fate of this diminishing resource that has prompted people like Will Koop to take action.

Letters DEAR EDITOR

a watershed total of 57,971 hectares, has been logged and replanted. In 1992, 42.2 hectares were logged. That's 8/100ths of one percent of the watershed. In 1993, 55 hectares will be logged. That's 1/10th of one percent of the watershed.

Logging was started again in the early 1960s because of an insect infestation that killed many of the trees in a 2,000-hectare area of the watershed. The current management strategy, adopted in early 1992, is based on preventative maintenance. Identify areas where the trees are at risk because of insect and disease attack, and replace them with young, more stable trees.

The major species in the watershed is western hemlock, which on the coast normally gets infected with mistletoe, a parasitic plant that has the same effect on the tree as a tapeworm has on a human. When the tree is weakened by mistletoe, it becomes susceptible to a variety of other pests that can kill it.

Replacing some hemlock stands with Douglas fir and western red cedar will help to keep a stable forest cover, which produces the best-quality water.

The 1992 management strategy is a major change from the previous strategy. Unfortunately for some people, it still involves some logging. That this logging is a means to an end—a stable forest—rather than an end in itself, seems to consistently get lost in this debate.

Rob Kyle, professional forester
Port Moody

Ben Parfitt replies: If one looks, as Rob Kyle does, at all the trees in the Coquitlam, Seymour, and Capilano watersheds, then it's correct to say about 6.7 percent of Greater Vancouver's old-growth trees have been cut down. However, if one considers that many would never be logged because of their location on steep hillsides, the numbers change dramatically. The GVRD says only a little more than 22,300 hectares are

Fax from Rob Kyle to Dan Jepsen (Association of B.C. Professional Foresters). Dan Jepsen used to be the Superintendent of GVWD Forest Operations. Basic Forestry Ltd. is the name of Rob Kyle's firm.

Basic Forestry Ltd.

#202-1002 Auckland St. New Westminster B.C. V3M 1K8

Fax Transmission

Phone 522-5573 Fax 522-4133

March 17, 1993 -- 3.03pm

To: Dan Jepsen, ABCPF

From: Rob Kyle

Number of Pages (including this one): 2

Notes:

Thanks for Ben Parfitt's article on the watershed. I responded to that article on Monday with the following letter.

On Monday afternoon, The Georgia Straight phoned to verify authorship. During the conversation, they thanked me for sending it. Their tone was very much that they wanted to hear other points of view. Maybe some others on your fax list could also respond.

On Tuesday morning, I had a phone call from Ben Parfitt. The Georgia Straight had phoned him to ask him about my letter. This is the first time a reporter has ever called me about a letter to the editor. He sounded like his feathers were somewhat ruffled, as he was quite defensive. If he is that sensitive over 1 letter, imagine what he would do over 6 or 8 letters. We should put more heat on him.

dwarf mistletoe (not actually a disease, but rather a plant parasite)] have not been shown to cause any widespread tree death in our coastal old-growth forests.

An occasional outbreak of an insect species has affected a relatively small area of forest but, as with disease, insects have not been shown to have any major widespread impact on old-growth forests similar to those in our watersheds. The report states that the balsam wooly aphid and the hemlock looper have “destroyed over 3,920 ha of trees” (p.39). This is somewhat misleading as the insects have not killed every single tree within this 3,920 ha. The aphid attacks primarily amabilis fir - one tree species. As amabilis fir never occurs in extensive pure stands and other tree species are present nearby, the aphid has never completely destroyed extensive areas of forest. Furthermore, outbreaks of the aphid have been associated with sites disturbed by logging, or road building. This would suggest that logging or roadbuilding could increase the incidence of snags by the aphid.

The hemlock looper attacks a variety of tree species, but rarely kills all trees over extensive areas. Outbreaks are usually relatively short lived (1-2 years) and mortality only occurs over limited areas of a few hundred hectares or less.



10 (f) THE AQUA TERRA CLASSIFICATION SYSTEM (ATCS)

The first limitation to logging and roadbuilding practices in the three watersheds since 1961 was from the implementation of the Aqua Terra Classification System (ATCS). ATCS was first developed by Dr. Briere in 1977, then with the Forestry Department at U.B.C., when he was contracted to investigate aspects of slope terrain in the watersheds. Dr. Briere incorporated a number of factors in determining slope stability and decided on a formula for road building and clearcut logging. Dr. Briere's formula for ATCS was divided into 5 classes:

- (1) slopes less than 27 degrees;
- (2) slopes 27-30 degrees;
- (3) slopes from 30-35 degrees;
- (4) slopes from 35 degrees up;
- (5) mountain hemlock, sub-alpine slopes.

The factors for the classes, according to the FSR, included “slope gradient and configuration, soil properties, water regime and vegetation stability.”

Based on the formula, the 3 watersheds were divided into two zones. ATCS classes 1-3 became permissible Forest Management Areas, a total estimated area of 22,337 hectares (55,195 acres), or 38% of the watersheds. ATCS classes 3-5 were designated as Watershed Reserves, a total of 35,634

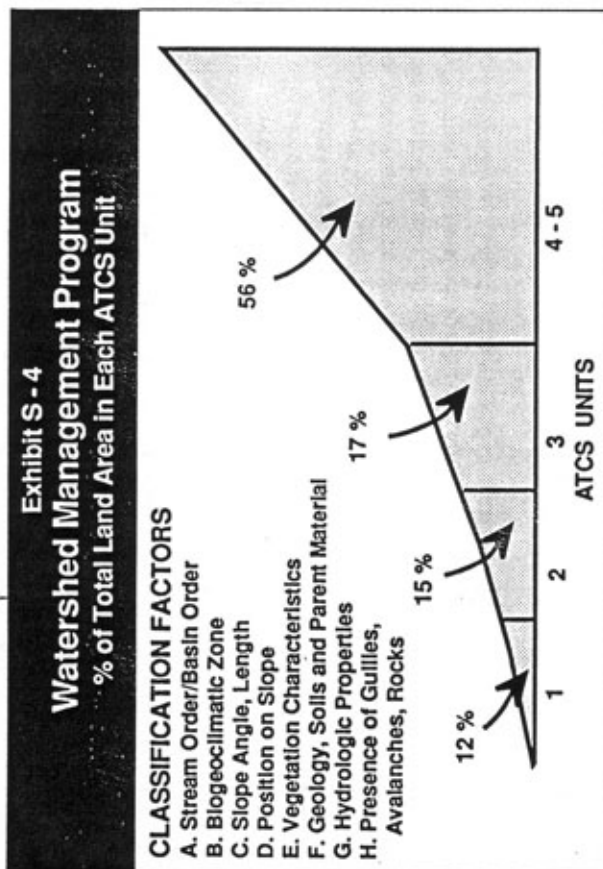


Table S - 5 Application of ATCS on GVWD Lands		
ATCS Unit #	Description	Area (ha)
1	<u>Forest Management Units:</u> Slopes are less than 27 degrees. Mass wasting and surface erosion are generally not a problem. Road construction and ground yarding systems will present few problems.	7,129 (12%)
2	<u>Forest Management Units:</u> Slopes are moderate, predominately 27 to 30 degrees. Mass wasting is not a major concern, but surface erosion and minor failures can occur if road construction and harvesting operations are not carried out properly. Ground yarding systems are suitable for these units.	8,569 (15%)
3	<u>Watershed Reserve - Forest Management Units:</u> Slopes are steep, predominately 30 to 35 degrees, but show few or no mass wasting events. These units are <u>potentially</u> unstable. Forest management operations are to be carefully planned. Road construction and ground yarding systems should be based on site specific conditions.	9,890 (17%)
4	<u>Watershed Reserve Units:</u> Mass wasting and slope instability are the dominant processes within these units. Slopes are generally greater than 35 degrees and failing. Forest cover removal may accelerate existing failures. Forest operations are restricted in these areas.	32,383 (Units 4 and 5 combined)
5	<u>Watershed Reserve:</u> These mountain hemlock sub-alpine units are environmentally fragile. Forest operations are restricted in these areas.	(56%)

hectares (88,052 acres), or 62% of the watersheds, and became restricted from activities due to danger of erosion. The overlap of ATCS class 3 in the Forest Management Areas were defined by the FSR as being “potentially unstable”, and that “forest management operations are to be carefully planned.”

Dr. Briere determined that any road construction and logging on the Watershed Reserves should be excluded from the pro-active forest management timetable due to the real danger of erosion. The ATCS program was submitted in the 1980 Management and Working plan and did not become policy until 1984, 17 years after the Amending Indenture.

The GVWD has used the ATCS to determine the areas that are potentially unstable and subject to erosion and has removed them from the operable land base. (FSR, page 29)

What is not clear in the FSR is to what extent roadbuilding and logging had already occurred in the newly classified Watershed Reserves prior to the ATCS guidelines. That is a very important consideration. If it had, then what sort of information is there regarding the problems that occurred there or that could yet occur? It is not discussed.

June M. Ryder, Adjunct Professor, Department of Geography, U.B.C., criticized Briere’s classification and commented on complexities associated with slope analysis (Appendix C, submission #92):

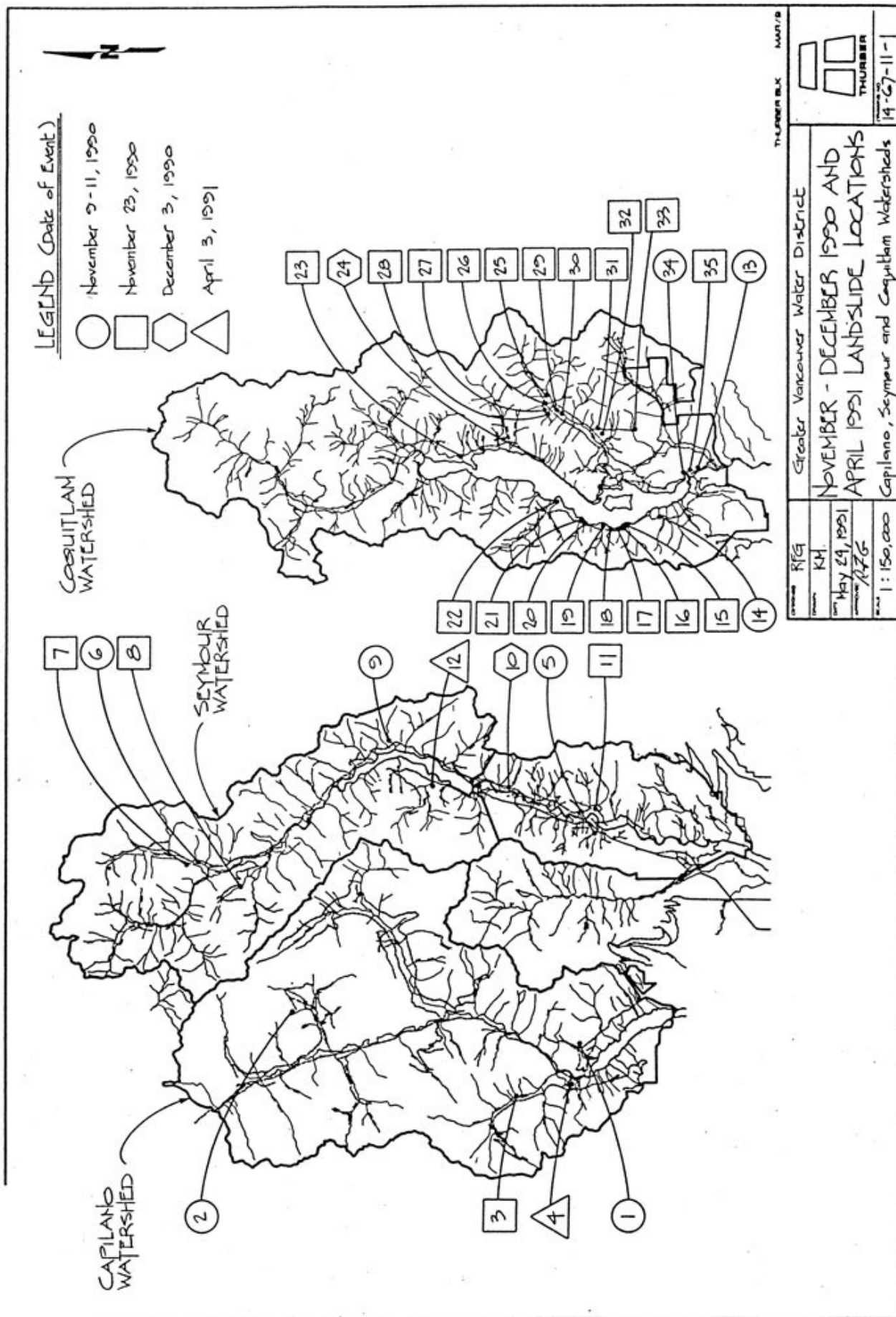
I have some grave concerns about the use of the... ATCS as a basis for planning to avoid slope stability and erosion problems in the watersheds. The suitability of the ATCS for this purpose has not been demonstrated. Instead of the ATCS, the standard system for assessing slope stability that is widely used throughout the coastal area of B.C. should be applied.

Ryder pointed out that the ATCS class 1 had to be subdivided into more sub- classes to “lead to a much more effective discrimination of stable and unstable land.”

In her presentation, Ryder was extremely critical of a 1990 study paper submitted by U.B.C. Faculty of Forestry Douglas L. Golding and Glenn Thompson, *Mass Wasting in GVWD Watersheds: An Inventory of Event and an Evaluation of the Aqua-Terra Classification System*. Ryder said that because their data showed a greater number of “mass movements” which occurred in ATCS class 1 than in ATCS class 2, it demonstrated a contradiction in their conclusions. Among a number of other inconsistencies, insufficient data and criteria, and “a lack of awareness of standard terminology”, Ryder said that they had also made a number of unfair comparisons which gave the impression that landslides and soil movements were less common in clearcut areas.



View of clearcuts on steep slope, looking westward from mid-Eastcap Creek, south-facing slope, Capilano watershed. Lions in the background, upper left.



Dr. Michael Feller, whose research has been on the effects of forestry practices on streamwater quality, recommended (Appendix C, submission #57) that the Forest Management Areas be reduced. He noted that from the 319 slides (mass soil movements) which resulted from a storm in November 1990,

...a rather high number were found in ATCS units 2 and 3. When one converts the number of movements found in the number of movements per 1,000 ha of land we find that ATCS units 2 and 3 have more movements than do ATCS units 4 and 5.... the data in my table above do suggest that ATCS units 2 and 3 may be major contributors to soil mass movements. If this is so then timber harvesting in these units should not occur as timber harvesting almost invariably increases the likelihood of mass movement of soil.... In light of the above, I would recommend a halt to all timber harvesting in ATCS units 2-5. Harvesting should only occur in ATCS unit 1.

In reviewing Ryder's and Feller's submissions, the Panel in the FSR recommended that the ATCS be modified, that the Forest Management Areas should be further reduced:

... a more specific landslide hazard rating system should be employed for planning operations.... the ATCS may not be as intensive a slope stability procedure as desired.... For those areas that will be designated for forest and vegetation management and for those areas through which access roads will be located, a more detailed consideration of slope stability will be required. (Page 39)

10 (g) THE STORM OF NOVEMBER, 1990

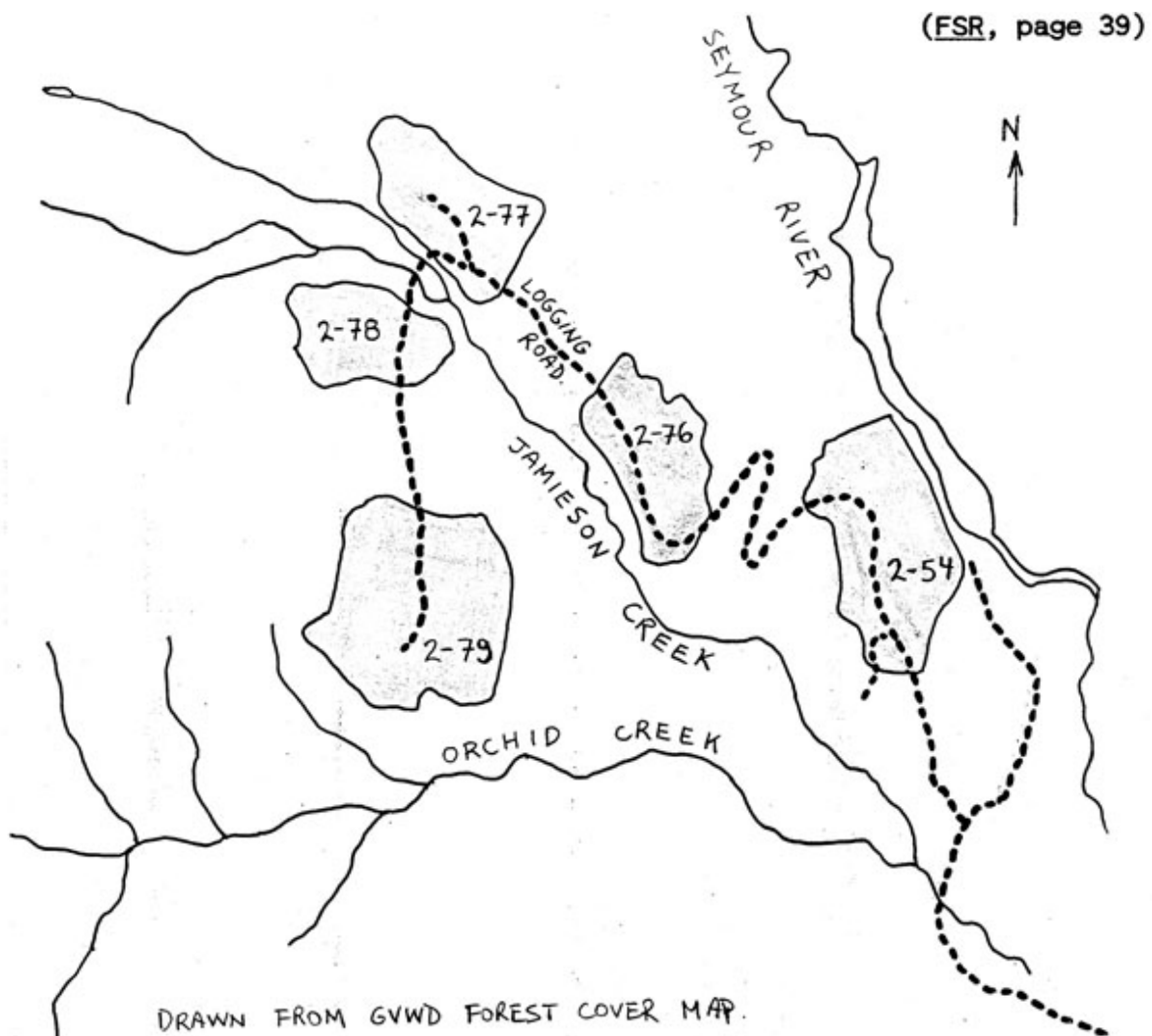
The Western Canada Wilderness Committee launched its own newsletter campaign on the issue of logging and erosion in the watersheds in the late 1980's. Mark Wareing, a registered professional forester working with the organization, was in charge of the campaign. In an interview with Mr. Wareing, he related that when he was employed by the provincial Forest Service, part of his duties was inspecting silvicultural practices of the GVWD forest management in the watersheds. He recalled on one occasion in 1987, reviewing the GVWD *Five Year Management and Working Plan*, he noticed that the GVWD was about to build a road northwards along the southwest perimeter of the Coquitlam Lake. Wareing said that he was deeply troubled over the proposal. In May, 1987, he sent a letter explaining his concerns to GVWD staff. He said that, in the case of the southwest side of Coquitlam Lake, the GVWD was taking an unnecessary risk because the slopes were unstable, and if a road was built it would clearly accelerate that possibility. Wareing said that he mentioned specific locations in this area where erosion and slope failures were occurring naturally. His warning entailed the GVWD to conduct a very careful analysis of the terrain before attempting anything at all. Wareing said that the GVWD did not listen to his advice and the road plans went ahead in 1988.

What is of interest here is the slope failures that occurred in this very area during the storm of November 23, 1990. There were 8 such failures, all along the road in the southwest region of Coquitlam Lake, as shown in the map provided by Thurber Engineering, Geotechnical Assessment of 1990-1991 Landslide Events in GVWD Watersheds, May 31, 1991 (see page 83). The Cedar Creek drainage, on the opposite side of the Coquitlam Reservoir, had a number of slides at the same time. The GVWD has an extensive road system in the Cedar Creek valley and clearcut a major portion of the sub-drainage.

10 (h) THE JAMIESON CLEARCUT EXPERIMENT FAILURE

The Orchid Creek hydrological study, which was funded by the GVWD, was introduced in the previous chapter. Part of that study was to monitor the erosional effects from roadbuilding and clearcutting on steep slopes, with the unfulfilled promise to determine future guidelines for the GVWD and elsewhere. A short distance up from the mouth of Orchid Creek, is the confluence of another creek, namely Jamieson Creek. This was the sub-watershed in which Douglas Golding, U.B.C. Faculty of Forestry, conducted his research. Golding, Associate professor of Hydrology, Faculty of Forestry, U.B.C. was hired in 1970, to conduct a:

long term study of the impacts of harvesting on water quality and quantity.... Dr. Golding's project was designed to gain a better understanding of the impact of the GVWD's management activities on the water quality and hydrology of the watershed lands. This research was initiated in 1970 in two adjacent drainages within the Seymour watershed. One was harvested, one was not. (DSR, page 31)



The topography, climate, soils, hydrology and vegetation in those drainages are representative of the rest of the watersheds. The water quality and quantity of both watersheds were compared to establish a relationship during the pre-logging period 1971 to 1978. The comparison continued during the 1978 to 1984 logging period and the 1984 to 1989 post-logging period. (DSR, page 32)

After monitoring the area for some time, a road was constructed to access the upper reaches and a number of clearcuts were made. During the experiment 19.2% of the sub-watershed had been logged. At one time Dr. Golding had requested the GVWD to actually increase the overall area clearcut - up to 30% of the sub-watershed. In an address at the Canadian Hydrological Symposium in Banff, Alberta, from May 9-11, 1988, he stated:

The GVWD has not been convinced to increase the logged area beyond the present 19.2%, although it is of interest to determine the hydrological affects of more severe treatment.

The occurrence of the slope failure on one of the Jamieson Creek experimental clearcuts in the November 1990 storm became the controversial topic. A major portion of one side of the clearcut, which started at the top, carried a mass of debris taking out a portion of the logging road, cutting a swath through the forest below, and on into the creek, where the slide also destroyed a concrete weir which was constructed to monitor the rate of water run-off.

During 1990/1991 a slide in a harvested area within Jamieson Creek occurred which was not evaluated in the context of the earlier work. (FSR, page 39)

Dr. Bruce Brandhorst (submission #99), professor of Biological Sciences, Simon Fraser University, had some strong words regarding Dr. Golding's research, and his participation as a Panel member. His criticism focused on material in the DSR:

An especially important document required for an evaluation of the conclusion that no adverse effects on water quality have resulted from recent GVWD management practices is the frequently cited report by Thompson and Golding (1990). It did not appear in the list of references in the Draft Report, and I have not found it listed in the Science Citation Index, indicating that it remains unpublished.

It is thus especially surprising to find that Prof. Golding was a member of the Review Panel: he found himself in the position of reviewing and evaluating his own unpublished research.... I question whether the Review Committee took a critical look at the data and the conclusions of Prof. Golding's investigation....

... the critical data for the autumn periods of heavy rainfall in 1989 and 1990 are missing. I was astounded by an unqualified statement of certainty made at the hearing by a member of the Review Panel that the high turbidity in the GVWD water supply this past November had nothing to do with the logging in the watersheds...

It is certain that those two small watersheds do not sufficiently correspond to others in the management area to make it possible to extrapolate the conclusion to the entire GVWD area....

Michael Feller had also criticized the conclusions drawn from the Panel regarding Golding's long research:

The results of that study cannot be extrapolated to all of the three large watersheds because the sub-watersheds studied are not the same as all of the watershed areas. There are many roads with steeper gradients in the watersheds than those in the logged sub-watershed of the study and the report (DSR) itself indicates that Capilano terrain is somewhat less stable than that in Seymour, for example. This contradicts the assertion in the report that "the topography, climate, soils, hydrology and vegetation [in the sub-watersheds studied] are representative of the rest of the watersheds.

Feller concluded that: "neither the rationale for timber harvesting nor the assertion that timber harvesting does not adversely affect water quality, can be supported scientifically."

Priority is water quality: the profits are incidental



MacKAY

DOUGLAS MacKAY

... former manager of the Greater Vancouver Regional District.

The original watershed management program included plans to remove decadent and diseased wood; to provide access for fire protection and security; and to immediately replant harvested areas. These practices have continued.

A healthy and vigorous forest will best protect the watersheds and yield the highest quality water. The only way to provide this is through an intelligent management program that includes selective harvesting.

The water district has always relied on expert advice in planning its work. The recent studies and reports prepared by an independent multi-disciplinary panel have confirmed the appropriate nature of the

district's watershed management. These studies were widely circulated for comment.

It seems to me that the Western Canada Wilderness Committee and its supporters, with an apparent agenda to stop all logging in British Columbia, are the only ones with a different opinion.

Also, the impression has been left that the watersheds are pristine areas of old-growth forest. The fact is that in the last century and the early part of this century the watersheds, along with most of the North Shore, were extensively logged and burned.

In particular, the Capilano Valley was the site of logging for a considerable time. A logging railway stretched well into the valley.

One of the first activities of the water district, after it was formed in 1926, was to acquire the private timber rights and lands to stop the unrestricted logging.

Without question, careful management of the watersheds is necessary. The water district has all the authority it needs to do this. The harvesting activities are part of overall watershed management. They have been carefully developed by the district to ensure the quality of water supply.

It seems to be a custom in our society to make major policy decisions by appealing to emotion rather than to evaluate factual information. This approach may make exciting stories but it does not aid in the development of sound public policy. □

10 (i) SUSPENDED JUDGEMENT

The Final Summary Report has a lot of ambiguous modifiers and statements. On the subjects of fire, insects, disease, the effects of erosion from roadbuilding and clearcutting, the language of the FSR reflects not only its soft support for the archaic arguments of "watershed management", but also its lack of honest investigative sense. The following excerpts will help the reader to clarify what I mean on the question of admission.

The requirement of an AAC (Annual Allowable Cut) in an area where water quality is paramount seems contradictory. (FSR, page 26)

Pursuant to the Amending Indenture of 1967, a gradual shift has occurred from programs driven by salvaging of insect infested or diseased timber towards a sustained yield, production-oriented forest, creating the potential dilemma of weighing water quality risks against timber harvest and revenue generation. Although it does not appear to have happened to date, this decision-making process could potentially compromise water quality in the long run. (FSR, page 27)

Some of the current provisions (of the Amending Indenture) do not necessarily encourage the GVWD to preserve and enhance water quality. To the contrary, they seem to present the GVWD with a constant dilemma of choosing between water quality protection and timber products to meet an AAC and sustained yield objectives. (FSR, page 28)

Several studies... preponderance of information indicates that road construction and maintenance tend to have a much higher potential impact than harvesting operations. (FSR, page 32)

Forest operations, including harvesting of timber and road building, have the potential to add to the natural erosion process and impact water quality. (FSR, page 32)

To minimize erosion potential and water quality impacts, cut block sizes since 1985 average 8 hectares and range from 3 to 21 hectares in size, which is small by industry standards. (FSR, page 29)

Road construction and maintenance activities create a potential risk to water quality through increased sedimentation and turbidity; however, GVWD has developed road planning, construction and maintenance techniques designed to minimize these risks. (FSR, page 41)

The GVWD developed formal road standards in 1980 and updated these standards in 1989 to strengthen the control of construction procedures and minimize the potential for erosion and sedimentation. (FSR, page 42)

Although all risk cannot be eliminated, GVWD has taken reasonable steps to reduce potential water quality impacts. (FSR, page 36)

The GVWD watersheds, typical of the coastal forests in British Columbia and the Pacific Northwest, have high natural rates of soil erosion.... As with most forested areas, surface soil erosion is thought to be of minor importance. (FSR, page 9)

Concerning water quality, technical literature has consistently indicated that road construction and maintenance activities may be major contributors to sediment production in forest activities. Most studies indicate that roads are of a greater potential source of sediment than harvesting activities. (FSR, page 43)

Concerning hydrologic regime, specific investigations... indicate that clearcutting can impact the average and peak run-offs from watersheds. (FSR, page 39)

The GVWD is generally using best management practices in harvesting activities and the Panel found no evidence to conclude that present harvesting practices have been a significant causative factor of excess turbidity in GVWD sources. (FSR, page 40)

Perhaps I can further illustrate my point by developing a similar analogy. The FSR says, let's say you are working outside sometime during the summer under the hot sun, and you take your shirt and hat off (keep your pants on), then the white skin on your upper body, exposed to the ultra violet light (with waning ozone layer), has the "potential", may "tend" to, "can" get sunburned.

10 (j) “SOCIAL AND ECOLOGICAL VALUES”



The GVWD needs to develop an old growth management strategy. Old growth forests have social and ecological values which must be protected. As an example, certain wildlife species require an old growth type of ecosystem to survive. Old growth corridors should be considered from valley floors to higher elevations. (FSR, page 41)

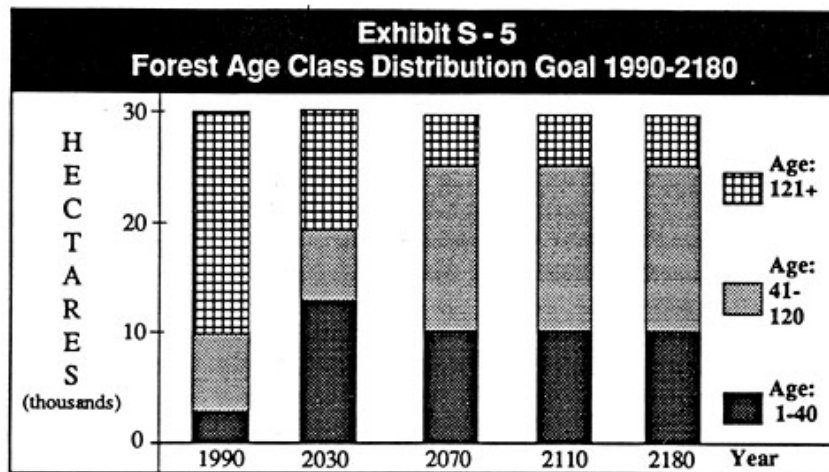
The social and ecological values referred to in the FSR are curiously absent in their report. The fact that these undefined “values” were given credence by the Panel, though not discussed, is unacceptable. Perhaps those “social and ecological values” conflict with the Panel’s model of “proactivity”, and perhaps if public investigations were to occur it would delay logging and create public awareness. In other words, how can the Panel incorporate these values into a model which has excluded them. The model says that almost all the old-growth forest, within the ATCS guidelines, is on the “planned stand manipulation strategy”. To evaluate the social and ecological values within the old-growth forests of the watersheds would force the Panel to shift into in the shadows between their definitions of a “reactive” and “proactive” position.

One of the foremost obstacles in people’s attempts to protect and wisely use these “values” have stemmed from the economic dominant policies in the government, university, and industry levels. Just examine the submissions in Appendix C. It is important to recognize that institutional powers and citizens have inconsiderately allowed the disintegration of these values. The “value” of old-growth has been defined, not in terms of its complex biological functions interrelated with other biological and physical functions, but simply in terms of its weaknesses, utility, and revenue. In that imprisoned sense insects are “pests”, diseases are “threatening”, and fires are “destructive”.

These “social and ecological values” are no new phenomena. People have advocated and attempted to protect these values throughout this century (i.e., the quote from Morley Roberts opposite the photo of the Western Red cedar, at the beginning of this report). There is a long, untold, and intriguing story on what people thought, not only on the subject of conservation and research, but also as it relates to our watersheds over the years. There is an enormous misconception and neglect of these historical figures and their thinking.

Perhaps the Panel or the editor forgot to ask themselves if the GVWD, at the time of its formation, took some of the values, they loosely refer to, into consideration. Certainly from 1926 to 1960 there is no doubt that the forests, from which these values existed, remained, thanks to the GVWD, to a great extent intact. And this brings up another point. The Panel states that:

When the Water District was formed in the 1920s, the GVWD did not inherit pristine watersheds in their natural states. To the contrary, significant areas of the watersheds had been logged and burned and both homes and logging camps were present. (FSR, page 8)



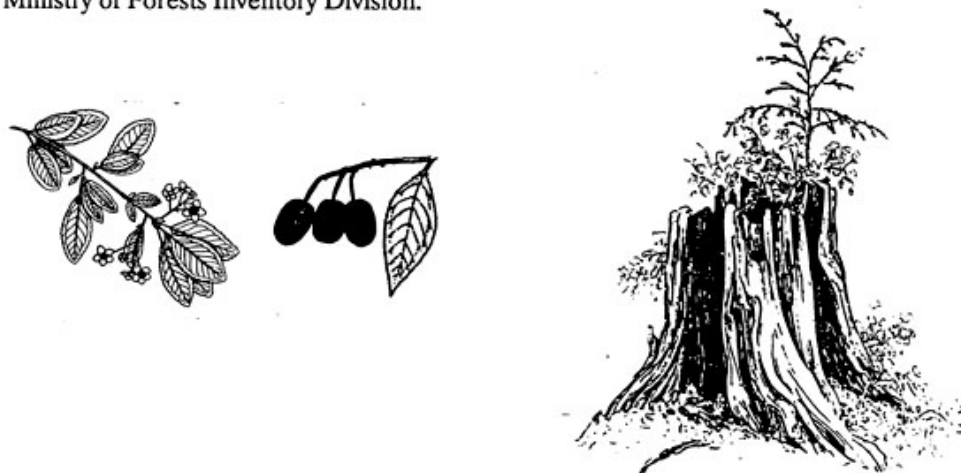
Major Tree Species of the GVWD Watersheds - CONIFEROUS

- o Douglas-fir (*Pseudotsuga menziesii* (Mirb.)Franco)
- o Western hemlock (*Tsuga heterophylla* (Raf.)Sarg.)
- o Mountain hemlock (*Tsuga mertensiana* (Bong.)Carr)
- o Western red cedar (*Thuja plicata* (ex Don in Lamb.))
- o Amabilis fir (*Abies amabilis* (Dougl.)Forbes)
- o Grand fir (*Abies grandis* (Dougl.)Forbes)
- o Yellow-cedar (*Chamaecyparis nootkatensis* (D.Don)Spach.)
- o Subalpine fir (*Abies lasiocarpa* (Hook.)Nutt.)
- o Sitka spruce (*Picea sitchensis* (Bong.)Carr)
- o Lodgepole pine (*Pinus contorta* (Dougl. ex Loud)
- o Western white pine (*Pinus monticola* (Dougl. ex D.Don in Lamb.))
- o Pacific yew (*Taxus brevifolia* (Nutt.))

Major Tree Species of the GVWD Watersheds - HARDWOODS

- o Big leaf maple (*Acer macrophyllum* (Pursh.))
- o Vine maple (*Acer circinatum* (Pursh.))
- o Red alder (*Alnus rubra* (Bong.))
- o Sitka alder (*Alnus sinuata* (Regal)Rydb.)
- o Paper birch (*Betula papyrifera* (Marsh.))
- o Dogwood (*Cornus nuttalli* (Aud. ex Torr. and Gray))
- o Cottonwood (*Populus trichocarpa* (Torr. and Gray ex Hook.))
- o Aspen (*Populus tremuloides* (Michx.))
- o Choke cherry (*Prunus virginiana* L.)
- o Willow (*salix* spp.)

The characteristics of the native tree species are well described in the references (Klika et al, 1986; Fowells, 1965). Methods of inventory are outlined in the Forestry Handbook (Watts, 1983), and associated references. Growth and yield patterns of the commercial tree species are outlined in the Growth and Yield Tables of the B.C. Ministry of Forests Inventory Division.



It is quite irritating to see this sort of misinformation in a body of municipal policy review. I don't think that this statement is at all helpful, nor do I believe the FSR editor investigated the history of our watersheds to come up with such a far-fetched conclusion. Certainly all the watersheds had some previous human intervention, but not to the same extent. The Panel and the editor only needed to glance at the maps prepared by the Schultz Co. to tell them the opposite. Aside from the main Capilano valley and the Sisters Creek area, none of the Capilano tributaries were roaded or abused by human contact - and that's no small area. As far as the Seymour is concerned, other than some of the area south of the Seymour dam, the rest of the watershed was intact. Just look back to Cleveland's address in 1924. Most of the Seymour was still untouched. And in the Coquitlam, other than a section of the Or Creek (formerly Gold Creek) drainage and the extreme southern zone, the entire watershed was undisturbed.

The people of the Lower Mainland still have the opportunity to forbid the GVWD from continuing to log some of the last remaining and magnificent extensive examples of low to mid elevation old-growth in the Lower Mainland. If you carefully examine the enormous extent of areas logged in the Lower Mainland (and trying not to get depressed), all the valleys, even the Squamish District corridors, there are only two significant areas remaining: the Stein Valley and the Upper Coquitlam watershed. This has perhaps been one of the best kept secrets regarding the Coquitlam. The public, restricted from access, which is necessary, were not allowed to see the watersheds. Is this what the Panel refer to as "social value"?

The emphasis in the watershed controversy has been focused on water quality, and the old-growth forest, our ancient heritage, has not. What would people say if they knew that gigantic western red cedar tree groves, with some individuals up to 17 feet in diameter, were being cut down in our watersheds? What would people think when they knew about some of the 600-1000 year and older rare Douglas Fir are still being liquidated, some of which ranges from 7 - 11 feet in diameter, which have somehow survived the catastrophic fires? What of the old yellow cedar stands throughout the watersheds? Why do you suppose the GVWD had planned to log the slopes of the western side of the Coquitlam? Because there still is a forest of great magnitude, proportions, and economic wealth. And all this in the name of bureaucratic water quality and fire prevention! The GVWD have not consulted the public on what they are actually cutting down in the watersheds, the last important old-growth stands in the Lower Mainland. The story is just about that - high quality trees.

Nearly all of the low altitude coastal old-growth rain forest of the Pacific Northwest region has already been destroyed because it is the easiest to harvest. Apparently, some pockets of it remain in the Coquitlam watershed and perhaps others. An immediate priority should be to protect these areas from further disturbances and to make them accessible to qualified researchers. (Bruce Brandhorst, submission #99)

In 1989 Karel Klinka conducted some field surveys in the watersheds and submitted a report on proposals for ecological reserves. It is mentioned in the FSR bibliography as *Survey for Potential Ecological Reserves in Capilano, Seymour, and Coquitlam Watersheds*, An Internal Report Prepared for the GVWD, Draft Unpublished Report. But no mention was made in the FSR text of the proposals, even though Klinka was supposedly one of the Reviewers for the Panel. Apparently Klinka was never consulted - he was simply handed the Draft Summary Report after it was printed.

Several years ago the GVWD initiated a survey for potential ecological reserves although no mention is made of these in the report. The GVRD initiative was commendable. Such reserves in the watersheds, particularly if they encompass entire sub-drainages, would be highly beneficial....



Will Koop used an automatic timer to take this picture of himself by an immense cedar tree in the Capilano watershed in July 1992. It was marked with an "X", indicating that it was to be logged. (Caption and photo used in the Georgia Straight article, March 12-19, 1993. Western Red Cedar, 45-50 feet in circumference.

Rare spotted owl found in local watersheds

Environment ministry identifies presence in four old-growth sites

THE RARE and endangered spotted owl, which has raised heated controversy over the logging of old-growth forest in the United States, has been identified in the Capilano, Seymour and Coquitlam watershed areas.

According to environment ministry biologist Dave Dunbar, the ministry found two spotted owl sites in the watershed forests in 1985, the first year it tested for the rare birds.

Dunbar said today four sites have shown the presence of spotted owls.

"We will probably be recommending that a more thorough survey be conducted, possibly with the GVRD (Greater Vancouver Regional District) helping in the funding," said Dunbar.

By Anna Marie D'Angelo
News Reporter

He said Washington state surveys of the rare bird involve spending six to seven nights in one area testing for spotted owl responses. Dunbar estimated that it would take three months to do a thorough job of surveying all the old-growth sites in the local watersheds.

An environment ministry report expected to be completed at the end of March will outline the

areas where spotted owls have been recorded; it will also indicate what is required to maintain the species in the watersheds.

In B.C., spotted owls live in old-growth areas (trees more than 200 years old) of the thick, coastal rainforest.

Dunbar said in B.C. the spotted owl is a red-listed species that is eligible to be on the threatened or endangered species list.

Preserving the spotted owl's habitat in local watersheds is a concern for environmentalist Ross Muirhead and his group, Friends of the Watershed.

Muirhead said our "back door" watersheds are the second most populated places for the rare bird in Canada after the Chilliwack Lake area.

And Muirhead is critical of the GVRD for its logging practices which he says dominate the management of the watersheds.

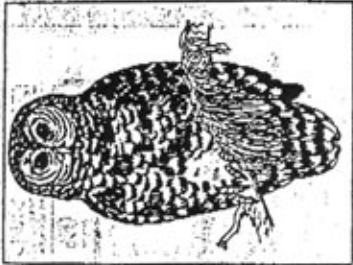
"They don't see the forest; they just see the trees," said Muirhead.

"They claim logging is necessary to maintain water quality, but we feel that that is an unsound rationale and the logging is done for employment purposes," said Muirhead.

He added that local watersheds still contain prime old-growth timber.

But GVRD watershed management administrator Ed Hamaguchi said logging is a tool that is used to maintain water quality.

"The forest is always in a mode of change, of growing and



G. Duncan
In B.C. spotted owls live in old-growth areas (trees more than 200 years old) of the thick, coastal rainforest.

renewal, and logging is a tool we utilize to maintain water quality," said Hamaguchi.

He said 62% of Lower Mainland watersheds are in reserve and only approximately 38% of their total land base is considered "operable" without having a subsequent negative impact on water quality.

Hamaguchi said the GVRD was very aware of the areas where spotted owls were recorded and incorporated that information in planning where to log.

Those plans, he said, are reviewed yearly by the provincial environment ministry.

"To say that they (spotted owls) are there and we shouldn't cut down trees at all in the watershed is wrong," said Hamaguchi.

Two logging companies currently cut trees in Lower Mainland watersheds:

- CNR Logging, whose contract expires in 1992;

- Haislee Timber, whose contract expired in 1991, but was extended to this year so the company could complete a contracted cut.

The GVRD's water committee will decide in March whether to institute a logging moratorium in the three local watersheds.

North Vancouver District Mayor Murray Dykeman, a GVRD water committee and GVRD board member, said the committee will hear an IWA-Canada submission before making a final decision.

"My position has been that we have a moratorium on logging and change the focus from forestry management to maintain and enhance water quality," said Dykeman.

In the U.S., the spotted owl was declared a threatened species in 1990 and more than two million hectares of old-growth forest in Washington, Oregon and northern California was designated critical habitat for the bird.

A U.S. logging lobby is attempting to get the U.S. government to exempt some of that land from the authority of the tough Endangered Species Act.

WANTED

For nearly a century biologists have been searching for nests of the Marbled Murrelet in British Columbia. This unique seabird may nest deep in coastal forests. Adult birds circle and call over mature stands at dawn and young have been found up to 70km inland.

Nests are most likely in mature trees where pediferous grow on branches more than 25cm thick. They may also be placed in holes or cavities in the trunk.

In Alaska, nests have been found on steep slopes and open tundra. To date two nests have been found in British Columbia.

We need your help in finding the nesting habitats of these elusive birds. Please report inland sightings of Marbled Murrelets.

Canadian Wildlife Service,
P.O. Box 340, Delta, B.C., V4K 3Y3



The Elusive Marbled Murrelet

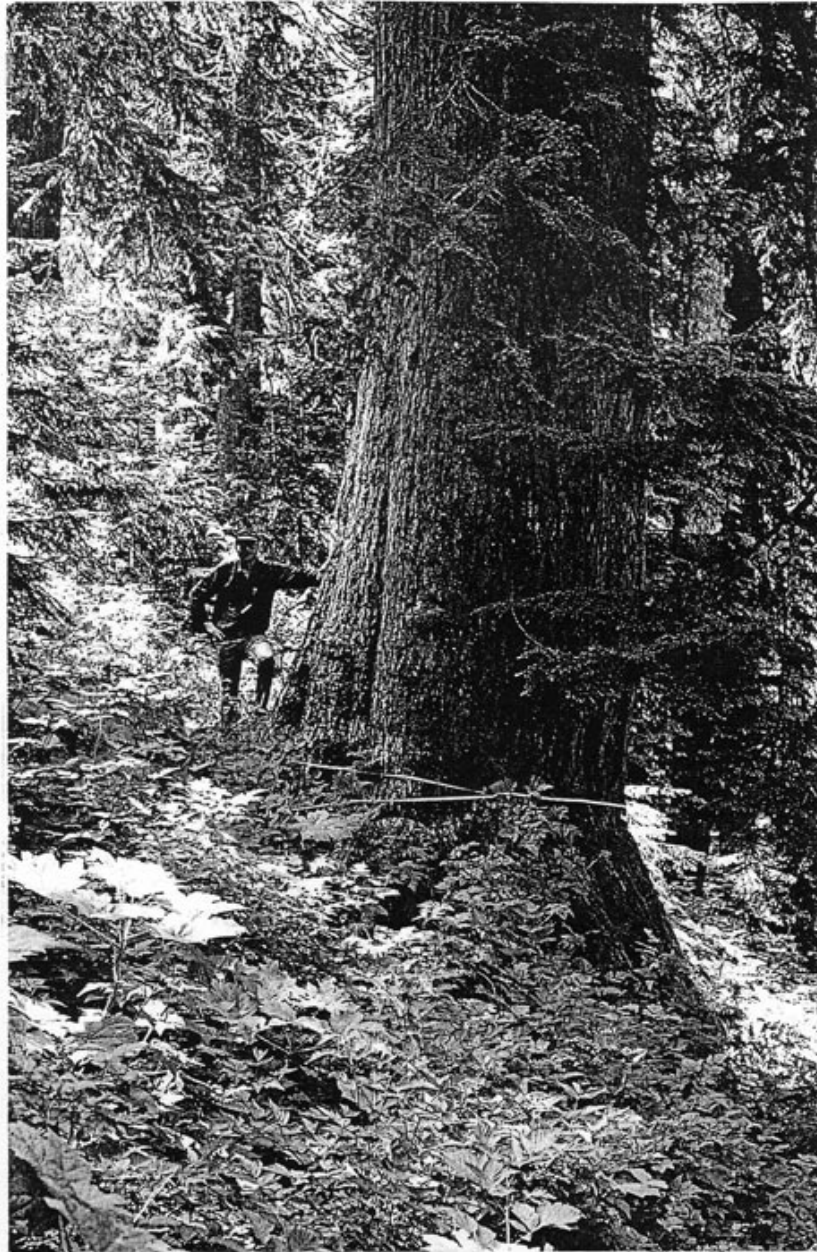
ENVIRONMENT

Right in our backyard

ROBERT SARTI
Vancouver Sun

Vancouver Sun, February 4, 1992.

Ralf Kelman found this record-diameter western hemlock growing near Barrier Creek in Lynn Headwaters Regional Park. - 28 feet, 5 inches, circumference.



Courtesy of Randy Stoltmann.



It's three times as large as the Carmanah and Walbran valleys put together — and it's right in Vancouver's backyard. But the ancient cedars, the unique yew trees and the giant Douglas firs that now face the logger's chainsaw over large stretches of the North Shore mountains are one of the Lower Mainland's best-kept secrets.

The old growth forests are maintained under wraps by a Greater Vancouver water district policy that bans the public as a hazard to its own drinking water, while at the same time allowing logging trucks to ply the three lake systems and loggers to cut their way through the old-growth forests.

"People from the Lower Mainland are among those fighting to save the environmental hot spots around B.C., but they've got the same magnificent untouched old-growth right in their own backyard and don't even know about it," says Ralf Kelman, an artist who has been walking through the watershed without permission for the past two years.

One of Kelman's discoveries is a forest of Pacific yew trees — valued for the cancer-fighting taxol in their bark — in a remote area on the west side of Capilano Lake.

The yews are larger than any known anywhere else, and water district officials have asked him for details on the exact location.

Another environmentalist, Randy Stoltmann, author of Hiking Guide to the Big Trees of Southwestern B.C., has found a stand of Douglas firs near Coquitlam Lake that top out at more than 25 storeys (75 metres) in height.

Escorted by the water district's chief forester, a Sun photographer and reporter recently visited another of Kelman's sites — a forest of Meares Island-scale western red cedar at the south end of Seymour Lake.

Many of the trees have already been marked with orange tape by forestry crews to show where a gravel logging road is scheduled to go. The trail veers



around one cedar that soars 18 storeys (50 metres).

Water district forestry superintendent Derek Bonin counted six other giant cedars within sight of the first. Asked how many more would be up the mountain-side, he could only shrug. "Hundreds, thousands, I'd just be guessing."

The forest was selected for logging after an aerial survey, but construction of the road has now been "deferred" by Bonin pending further environmental studies.

"I was concerned about the effect on water quality in the streams if logs were hauled through," he said.

And the water district, under increasing pressure from environmental groups, will consider later this month a moratorium on further logging until a comprehensive two-year ecological inventory of all forests in the 38,000-hectare watershed can be completed.

But meanwhile, large-scale tree-cutting on 14 other cublocks on Seymour Lake and Capilano Lake continues as part of the 1992 logging plan.

The water district's long-term plan calls for logging 38 per cent of the watershed.

Another type of reserve is a wilderness area. Currently, the upper Coquitlam watershed is in one of the Ministry of Forest's proposed wilderness study areas. Designation of this small portion of the watershed would in no way compromise the quality of water it produces.... I, therefore, recommend that ecological reserves be designated within the watersheds and that road construction in the upper Coquitlam stop immediately so as not to pre-empt any future designation of the area as wilderness. (Michael Feller, submission #57)

Think about it for a moment. Why wouldn't the Panel discuss such an important initiative? Then put it in the context of the rest of the province. And on top of it all, the editor neglected to discuss the proposal even after people chastised the Panel for not doing so in the *Draft Summary Report*. Once again, we are confronted with the Panel's bias and model of pro-activity, and it indicates a great unwillingness on part of the Panel to discuss it along with their comments on "social and ecological values".

And what is the fate of some of the so-called non-commercial varieties of soft and hardwood species in the watersheds? Are they being replanted after the logging, and should they even be included in the liquidation scheme? For instance, the yew tree has long been regarded by the GVWD as valueless tree. It, as well as many other species, were all mowed down in the clearcuts. During the watershed public hearings in May 1991, Ralf Kelman gave an oral presentation, eloquently describing the wonderful and record size yews he had encountered in the Capilano, some of which were left by early day loggers. The following speaker, Ray Marsh, with Marsh Logging, contractor at the GVWD log sort, who had worked in the watersheds since the early 1960s, and logged the southern slopes of Seymour Mountain, had no kind words for Kelman and his presentation emphasis on the yew tree. Only recently, with the emphasis on yew trees for medicinal value, has it become prized, but also endangered once again.

But "ecological values" relate to more than just trees. Bird populations, fresh water fish, amphibians, insects, animals, all are part of the forest habitat web. In this regard there has been much activity in some of the watersheds recently because of the discovery of marbled murrelets, a bird species that nests in the soft upper stories of old-growth trees. Among their many secret nesting sites, there have been some Murrelet findings in Hesketh Creek, just north-east of the Lions in the Capilano catchment. Why such an important discovery during the time of the Draft Summary Report was not briefly mentioned in the FSR I can't say. Correspondingly, there has also been some important research in the watersheds on owls, particularly the rare spotted owl. Also, standing snags, which are the logging targets for forest fire prevention, are home to certain bird habitat.



During a noon hour lecture at U.B.C. in January, 1993, Michael Feller asked what some of the ecological consequences were of the GVWD altering the composition of the watershed forest, namely the old-growth western hemlock and amabilis fir (balsam), which foresters advocate to be more

susceptible to insects and disease. Feller related recent research in Oregon where it was discovered that birds gather seeds from old-growth western hemlock cones during the winter season, when other tree seeds aren't present. He also illustrated that when amabilis fir are removed it alters squirrel habitat patterns, because they feed on their cones. He said that more and more research has determined that there are:

...fairly intricate ecological relationships between tree species and animals. And the question is - what is the relationship between tree species and animals? And the answer is, is that we don't know.

10 (k) CRITIQUE OF THE AUDIT

Comments from GVRD's own panel member (Greg Kirmeyer) that fire, insects and natural erosion threaten to foul the water supply (Vancouver Sun, May 3, 1991), if accurate, is ludicrous and scientifically unsound. The vast majority of scientific literature indicates that the building of roads and the logging of a watershed results in altered flow patterns and is almost always accompanied by more debris and sediment put into the stream. Also, especially after slash burning, more dissolved solids enter the streams. I have two degrees in aquatic biology, have collected thousands of samples from B.C. streams affected by land use activities (including the Capilano and Coquitlam Watersheds) and have been qualified as a sediment expert in B.C. courts on over 50 occasions. Should the GVRD really be serious about logging-related impacts on water quality, they must make an effort to contact some excellent researchers that have spent many years studying the issue. To conclude that old growth forests generate more dirty water than an area subject to road building and logging is a case of wishful thinking so as to support some hidden agenda. (Otto Langer, R.P. Bio, submission #93)

When the GVWD contracted Economic Engineering Services Ltd. to conduct an audit, history sort of repeated itself. Just before the anxious Schultz Co. planned to submit their report to introduce a logging program to the GVWD Board came the storm event of early November, 1955, and like some foreboding event in the Bible, the heavy laden clouds struck with warning and judgment. And about the time the *Draft Summary Report* was off to the printers came the storm event of November, 1990, and the collapse of the Jamieson experiment and many of the steep and roaded slopes in the Coquitlam. Now it was the public's elected office, the GVWD, who thought that they could convince the public, through their consultants, that these events had little to do with their "management" of our watersheds, in spite of the warning.

Despite some of the positive recommendations, which have redirected the GVWD's Watershed Management Department initiatives - to cancel the Amending Indenture, to curtail logging and roadbuilding, and to conduct an "ecological inventory" - there are a number of shortcomings in the Panel's Final Summary Report. A number of their findings and recommendations are biased, misleading, inaccurate, contradictory, and dishonest. Biased because some members are seen to be in a conflict of interest; biased because the readers are strait-jacketed into seeing the world of the watersheds with a "pro- active" vision. Misleading because they assume that everyone will accept their unfounded and hollow theories of why the public ought to accept a logging program; misleading because they have not evaluated the rich and complex world of old-growth. Inaccurate because they have not taken a careful look at the history; inaccurate because they have not carefully studied the data for their charts and conclusions. Contradictory because at one moment they seem to support a position, and at another they don't. Dishonest because they have chosen not to incorporate relevant documentation and data. Both the Draft and the Final Summary Reports were rushed.

I think we have to ask ourselves some very hard questions here, and come up with some thorough and honest answers. Even with the figures of a road network of just over 300 kilometres, combined with a total of almost 4000 hectares (almost 10,000 acres) of clearcuts in a period of 32 years, how can the Panel come up with the incredible wavering conclusions regarding sedimentation, turbidity, erosion, and slope failures?

The Panel continues to rely heavily on the results of a preliminary, unpublished report on a study by its member Golding to make its case for the absence of adverse effects of logging on turbidity of the water. The Panel now acknowledges that the methods used for measuring total turbidity were inadequate, but accepts the tentative conclusion anyway.

The current Technical Review Panel, having failed to prepare a balanced, scientifically meritorious Report, should be dissolved and replaced by one more broadly representing current understanding of forest ecology and resource management. Its report on proposed management policies should be submitted to impartial scientific peer review before being considered for adoption. (Bruce Brandhorst, Ph.D., Professor of Biological Sciences, S.F.U., letter, October 14, 1991)

I believe that because of these reasons, and others, there should be a proper, careful, sensible, and responsible investigation of the present Management and Administration of the Greater Vancouver Watersheds. After all, the taxpayer had to fork out a lot of money to pay for this “evaluation” and “review”, and it seems like we may not of gotten our money’s worth, much like the past 32 years. It seems to be a big game, and someone is gambling with our heritage and values. Perhaps a substitution of process is in order for the public to get a thorough investigation.

One of the submitters articulated the need for a fairer process to be brought to the table:

We also agree that the management strategies should be subject to periodic and independent reviews. Furthermore, we believe that these reviews should occur through a public consultative process. This review process would be best accomplished by allowing legitimate, interested organizations access to the watersheds for purposes of assessment. (Elaine Golds, Burke Mountain Naturalists, submission #42)

In order to accomplish this legitimately, the GVRD/GVWD must become humble and make themselves not only accountable to their historical origins and policy, but also regain the trust of and accountability to the people whom they represent. People believe there is more than just the ecosystems and the earth being eroded. After all, who owns the watersheds?



The following is a letter from the Chief Forester, J.R. Cuthbert, to GVWD Commissioner Ben Marr, December 19, 1991. The letter was written shortly after the motion by the Water Committee for a moratorium on logging in the Watersheds, a motion which was curiously detracted after an I.W.A. intervention.

Thank you for your letter of December 16, 1991 and the accompanying minutes of the G.V.W.D. Administration Board Meeting of November 27, 1991.

I am pleased to note from the minutes that the Board has endorsed the recommended principles of sound resource management in the watersheds. I agree that the maintenance of high quality water must take precedence over any other objectives for these watersheds. The Ministry of Forests supports the development in the G.V.W.D. watersheds subject to water quality objectives having the highest priority and not being compromised in any way.

I am concerned about the Board's suggestion of terminating existing logging contracts and restricting future harvesting operations to those stands that are categorized as "diseased or insect affected, fire hazard or erosion control". This would appear to be a technically unwarranted action, in view of the independent Panel's conclusion that road building and timber harvesting do not appear to have created a water quality problem. I'm concerned that this would set a precedent for other community watersheds, and restrict future development in the Vancouver watersheds.

These specific recommendations in the Panel's report that focus on ecological mapping, water quality monitoring and erosion control measures should be implemented as soon as possible. We strongly support the need for ecological mapping and water quality monitoring. MOF (Ministry of Forests) staff, however, suggest that the Panel's cost projections in excess of a million dollars for each of these initiatives would appear to be an order of magnitude too high. We estimate that \$250,000 for all three watersheds would provide ecological mapping, terrain and slope stability mapping, surface erosion assessment and stream channel mapping and classification. A sediment budget study could be initiated for approximately \$100,000 and continued for approximately \$30,000 per year, which would identify all sources of sediment and quantify the amounts from each source. Your staff should contact mine to explore the technical details of these studies.

The suggested revisions to the Amending Indenture are supported and I have instructed my staff to meet with yours at an early date to draft the appropriate changes.

In view of the concerns that have been expressed about development in the watersheds, I urge you to implement the aforementioned strategies as quickly as possible. I would suggest that a three year time frame would be reasonable. This would allow time for mapping, continued careful development, implementing such initiatives as biodiversity and old growth, water quality monitoring and a detailed assessment of the operations. A formal evaluation could be undertaken by January, 1995 and the Management and Working Plan revised the following year to reflect appropriate changes.

In summary, the review and recommendations of the Panel are most timely and welcomed. I had an opportunity to tour the Capilano and Seymour watersheds on November 29, 1991 and I was impressed with the high standards of practice. When the recommendations are implemented, I am confident that both forestry and community water production can co-exist even better in the Vancouver Watersheds.

11. POST AUDIT

Several months following the disappointing audit, *The Final Summary Report*, the Water Committee carried a motion for a moratorium of logging in the Greater Vancouver Watersheds. It was as though the original policies of the GVWD were being heard once again, but not for long. This time the B.C. Ministry of Forests' Chief Forester (see page 98), the I.W.A., the forest industry, the Share organization were lobbying hard to withdraw the motion - which is what happened - and logging continued for 1992. Nevertheless, it was apparent to the municipal representatives, after a very close 5 to 4 decision on February 28, 1992 for logging to continue in 1992, that things had changed regarding the past 31 years. It was also quite timely that the Vancouver Sun published my article on February 26th - two days before the vote (see Appendix D).

At the end of July, the GVWD had arranged a tour for people concerned about the logging practices (which they refer to as "special interest groups") in the Capilano and Seymour watersheds. They had intended to show them the second growth forested sites which they were "commercially thinning" but Paul Hundal (SPEC representative) advocated the group be given a tour of the proposed old-growth clearcuts for the fall of 1992. It was on that trip that I first saw the Capilano watershed. I was quite impressed with the old-growth forest, especially in the East Capilano Creek area. While the group was busy debating the issues of logging I, and two others, walked off into the forest and discovered a wonderful grove of Western Red Cedars. I came across a magnificent cedar, with a buttress of roughly 45 - 50 feet in circumference, spreading out into a double trunk 50 feet up above, the sun sparkling through its high branches. The photo I took of it ended up in the Georgia Straight article (see page 92 and Appendix D). I had seen something most impressive and became quite disturbed about the objectives, once again, of the GVWD. According to Andre Arsenault, a U.B.C. researcher on the biological dynamics and age classes of old-growth in the watersheds, this particular area had never seen any type of natural disturbance for well over one thousand years (i.e., no fires). In fact, Arsenault had even brought in experts who verified the historical conditions. I began to wonder even more about the reasons and arguments for fires and insects which the GVWD and foresters have been promoting after discovering these revelatory details. Nevertheless, after a public open house in October 1992 for input on the proposed cutblocks in the Capilano, some were deleted by the GVRD, but most were not, and the one in which I saw the big cedar was scheduled to go.

In September of 1992, the GVWD hired Tom Griffing on a three year contract as project manager of the ecological inventory. Griffing has his own firm, Griffing Consultants Inc. (GCI), "a firm that conducts environmental and management service projects with specialized and highly personalized attention by the principal." The ecological inventory and budget was recommended in the Final Summary Report, and in the preceding page the Chief Forester made a further recommendation - to reduce the spending in the overall inventory.

The GVWD also hired Acres International, a consulting firm, to coordinate the field studies and assemble the information. The first document on the ecological inventory was published in March 1993, the GVWD Watershed Ecological Inventory Pilot Study (Jamieson-Orchid-Elbow Drainage). The study area was none other than Golding's research area (see pages 79-81), apparently a model site for the rest of the Watersheds. Curiously enough, the Pilot Study mentions that Golding's research data has gone missing. The Pilot Study is written by a consortium of consultants: Oikos Consulting; BA Blackwell & Associates; Ferrotek; Remtek; and Acres International. The intent of the ecological inventory is to take random sampling in the watersheds and then determine an overall strategy for Watershed "management". Acres International is bound by Terms of Reference.

In early April, 1993, the Water Advisory Committee (WAC) had some time to review the Pilot Study before they met with the consultants of the ecological inventory. [The 15 or so members of the WAC, which were elected in November 1992, were delegated to meet, discuss, and make recommendations regarding the objectives and policies of the Greater Vancouver Water District. The purpose of the WAC was to provide a forum for public input.] Some of the members of the WAC were very critical of the objectives and conclusions of the Pilot Study. After the meeting with the consultants, the minutes and motions of the WAC were made, and passed on to the GVRD Water Committee. Apparently, the recommendations were watered down and ignored by the Water Committee, and of course the Water Committee passes on its recommendations to the monthly GVRD Council. Is the appointment of the WAC a mere window dressing when it becomes critical of the management of the Watersheds?

In January of 1993 I learned of the GVWD's intention to halt all logging in the watersheds, except for the cutblocks which were still to be completed in the Capilano. In 1993 Coquitlam watershed was slated for a lot of "management". Approximately 22 cutblocks were scheduled for the Coquitlam. A lot of plans had been forged for taking out a lot of very big and "valuable" old-growth, and quite wisely, the GVRD realized the political suicide of such a plan. They were still concerned about the roadblocks of November 1992. Yet the GVWD had tabled six more cutblocks in the Seymour and Capilano watersheds. Three were in the Seymour Demonstration Forest (Plantation), one of which was a very large area right up to the top of Hydraulic Creek, where the public could get a first hand look at their logging. That is the area which Ralf Kelman has been insisting a trail should be built into for people to see some of the last, and publicly accessible, Douglas fir (see front cover), and other old-growth. Another cutblock was directly northeast of Rice Lake, across the Seymour River, an old-growth site, one of the last on the River. All three cutblocks were deleted after the Water Committee decided against them. Two of the three remaining (two small area lightning fire burns) were also deleted after a professional assessment and recommendation. The remaining cutblock proposal in the East Capilano Creek area is a former site from a fire from the Capilano Timber Co. It has a mixture of some healthy cedar, a lot of cedar snags from the burn, and young hemlock. The site has some very steep slopes (up to 45 degrees) and an aerial harvesting system is being proposed. Once again the question must be asked: Is there a real threat of fire here or not? After some 70 years there has been no occurrence of lightning causing fire in this area.

12. SUMMARY

Esau said, "I am about to die; of what use is a birthright to me?" Jacob said, "Swear to me first." So he swore to him, and sold his birthright to Jacob. (Genesis 25: 32-33.)

The Greater Vancouver Water District, and the incorporation of the existing watersheds, was born in a time when many people, with great vision, pride, and honour fought for and established the future of an abundant and high quality supply of water. From the mid-1910's to the mid-1920's, government and citizens alike fought to protect their water supply, to keep the watersheds free from any industrial or other activities by not disturbing the natural processes in the forests. That period of history also coincided with a powerful conservation movement throughout North America, not the intensive forest industry "conservation" lobby at that time which focused on forest fire prevention so that the "virgin" "decadent" forests might later be liquidated.

The most important thing to understand is that the *Land Act* legislation for the Greater Vancouver Watersheds made them quite unique in relation to the rest of the province when it was provided in August 1927 – apparently, no other communities took advantage of existing legislation empowering a city/municipality/ community with an extended Crown lease (999 years) to govern full control over it's watershed(s). The watersheds were now protected from industrialization, including the *Mineral Reserve Act* (1930). And of course when E.A. Cleveland, the former Water Comptroller for the province, a highly regarded and experienced engineer, took the helm as Commissioner he helped the Water District gain a reputation unparalleled in the rest of the continent. This information I have from correspondence to and from the Water District. For example, the Water District's policies and infrastructure even influenced Wellington's watershed policy, in New Zealand.

For many years GVWD administrators were persistent and successful in purchasing the alienated lands in the watersheds with taxpayer's monies, and were able to deny and prevent the abundant schemes for logging in the watersheds. This is most evident from the difficulties experienced by those who wanted to change the policy in the 1950's - the public's perceptions and reactions. And it was difficult because some of the GVWD administration, for whatever reasons, had to disassociate and distance themselves from what was once fought for, and had to try and restructure what was once the very reason for their formation. It surely wasn't smooth sailing, and it still isn't, especially when someone criticizes them.

The most puzzling feature of the history of the Greater Vancouver Water District was the transition from its position of preserving the forests in the watersheds to one of logging them, both apparently for the same reasons - our quality of water. I believe the essential difference between the two phases lies not only in the great pride, vigilance, and fierceness of the former, but also in the public's growing opposition to the latter.

There is public concern and mistrust in the present "forest management" of the Greater Vancouver Watersheds. People are saying that they have been duped into believing the many myths that foresters advocate in cutting the remainder of our vanishing and high quality old-growth. They have been duped into believing that the rate of logging and roadbuilding in the watersheds since the early 1960s has been for the sake of their very quality of life. And it is not just one of the ecological organizations, as some of the submissions most falsely allege, which have opposed the GVWD. That is another source of misinformation: health organizations, doctors, engineers, professors, biologists, scientists,

ornithologists, District Councils, and so on, are also in opposition to the current logging and roadbuilding.

The fault of the GVWD/GVRD was that once the logging began they didn't (or no longer could) control the amount of roadbuilding and logging in the watersheds. There are some very important reasons and factors for this. The timber lobby is the prime consideration, both from the ties of government and industry, along with the old forestry school economic philosophy of "management", "efficiency", and "production". For it is evident, based on much of the above evidence, that the reasons why the GVWD is logging to the extent they are, is not to protect or enhance the quality of our water supply, but one of control and profit. But who exactly benefits and profits from this and what are the costs? It especially profits those who hunger for the now rare, high quality wood products. And it really costs the public through its once wonderful forests, which are themselves the great keepers of the earth's stability, and the reservoirs of both our lives and those of the natural world.

APPENDIX A: THE GREATER VICTORIA WATER DISTRICT

Both the fires which Cleveland referred to in his report in the Greater Victoria Water District resulted from the logging operations of Sooke Lake Lumber Company. By September 1951, the issue of logging in Victoria's watershed became quite public. The editorial on September 14, 1951, in the Victoria Daily Times, "What's Happening at Sooke"; the response in a letter from the Chief Commissioner of Victoria's Water District, Ralph Davis on September 19, "Logging the Watershed"; and the response to Davis' letter on September 26 by Gordon R. Sword, chairman of the South Vancouver Island Rangers, Inc, Natural Resources Conservation Committee, "Rangers and the Watershed".

When Ralph Davis became Commissioner of the Greater Victoria's watersheds late in the 1940's, he did not agree with Cleveland's policy of no logging for Greater Victoria's watersheds. That is evident from Davis' participation and testimony at the first Sloan Commission in 1944 - 1945. The Commission was a provincial investigation of forestry practices in B.C., and was only the second such since 1911, and long overdue. In spite of the Commission's final emphasis, one of the main themes of that Commission was forest cover and water run-off. The defiant testimonies from the Interior of B.C., from the Dominion Fisheries Officers (later called Department of Fisheries and Oceans), and others tell the story. Unfortunately, the final arguments of the Commission pretty well ignored the presentations which dealt with the consequences of clearcut logging to water run-off, erosion, river and stream alteration, and the effects of all of these on fish habitat. The Chief Forester, C.D. Orchard, didn't want to deal with the consequences of it, and the Liberal government and the forestry industry began a long public campaign to stifle the evidence of those testimonies. Ironically, like Cleveland, Davis was also the provincial Comptroller of Water Rights.

In 1992, the Greater Victoria Regional District also began an audit on its watersheds, to investigate it's policy on logging. Economic Engineering Services were also hired to conduct the audit, and the final recommendations were to shut down logging in Greater Victoria's watersheds. There was a lot of public attention and participation in the formation of those recommendations, and I'm not going to spend much time here relating the events. So I've just included a few newspaper clippings to help the reader in this regard.

WHAT'S HAPPENING AT SOOKE?

Is the Greater Victoria Water Board planning to permit extensive logging on the Sooke watershed, and if it is, will the operation endanger the future water supply of this area? The questions have been hovering in the back of citizens' minds as incomplete reports circulate regarding the proposed sale of timber northwest of Sooke Lake.

Misgivings have been made public by Gordon Sword, head of the South Vancouver Island Rangers Inc., who has consistently argued against removal of trees from that area.

Neither Mr. Sword nor any other Ranger poses as a water expert. He and his fellow members do, however, know the wild country on the watershed probably better than any other group of laymen in this region. Because of their knowledge of the woods and of the transformation which occurs as a result of logging operations, their point of view merits public consideration and inquiry.

Water is probably our No. 1 natural asset. The supply at Sooke and Goldstream will be of vital importance to this community not only during our lifetime, but in the years to come. If logging operations are going to have any effect on that supply, the public should be informed.

No one questions the good intent of the authorities who control the watershed. They are men of high civic standing, and provision of a continuing and improved supply is naturally their objective. It is reasonable to ask, however, that they tell the public what plans are being drafted for the protection of the supply and what part agreements for logging may have in them.

As we understand it, the water board has in mind the selective logging of sections of the watershed with a view to using the timber to produce revenue for water system development. The board is a non-profit making agency. It faces heavy expenditure in the future. What it might realize from the sale of timber could go toward financing development and a supervised forestry program on the watershed.

The Rangers, according to opinions expressed at a recent meeting, feel that the board could make a terrible mistake on that point. They hold the view that the shallow soil in the watershed regions could be lost before another crop of trees grows, that reforestation could be carried out only under extreme difficulties, if at all, and that the whole water supply is in jeopardy if logging is authorized.

The issue is one of direct concern to every water user. On that basis any negotiations which may be proceeding, any plans which are being drafted, should be given the full light of publicity.

How much of the territory involved would be logged? What does the board expect to receive from any contracts that may be awarded? How fully is Greater Victoria protected against damage to the watershed? How selective is selective logging? Is such an undertaking a gamble? And if so, how much are the people risking on it? Is the fire hazard increased or diminished by logging?

These are questions which only the authorities and specialists can answer. Surely they deserve replies before any action is taken. Once the trees are cut, they can't be tacked back into place. New ones take 15 years to reach Christmas tree size and big timber cannot be produced in less than several generations.

Logging The Watershed

Your editorial of Friday, Sept. 14, 1951, entitled "What's Happening at Sooke" is answered in previous editorials and reports published in the Daily Times from time to time from the 14th of March, 1949, when the decision to log watershed lands on a sustained yield basis was first announced by the Water Board. However, you have asked specific questions which I shall be pleased to answer.

The Water Board is planning to log certain parts of the Sooke and Goldstream Watersheds. At the present time, seven separate contracts have been let but these are primarily "salvage" operations required for both fire protection and pathological reasons. A larger, long-term contract has been recommended to the Board and it is hoped to call for tenders in the near future.

BASIS

The basis of the forest management plan for the watersheds is to remove each year an amount of timber equal to what the area will produce in growing timber. This is the recommended practice for all British Columbia forest lands. It requires competent and thorough knowledge of the timber cover, soil cover, topography, pathological conditions and fire protection of the area. That is why the Board employs a full-time forester and also calls on a consultant forester when important decisions are to be made.

The Water Board has been told that the combined Sooke and Goldstream Watersheds of 30,000 acres will allow an annual cut of nine million board feet forever!

The total timber cover is estimated at over 300 million board feet, a large part of this being "mature" timber that is no longer putting on an annual increment of growth. An area of mature timber such as this lies west and northwest of Sooke Lake. While it stands in virgin state, this block of old mature timber is a depreciating asset but the deep soil cover has shown that this area is highly capable of growing Douglas Fir.

The foresters, therefore, recommend its removal over a period of years so that new growing timber will cover the area after natural reforestation from seed trees surrounding the logged areas.

It is interesting to note that one group of citizens has consistently argued against removal of timber from any part

of the watershed, yet in their arguments are apparently referring only to timber on steep slopes with shallow soil conditions. This group has been told that the Board is not going to log timber where such conditions exist. The Board requires a green cover over all watershed lands but wants a growing cover of young trees instead of a mantle of over-mature timber rapidly becoming decadent.

The argument that "reforestation could be carried out only under extreme conditions, if at all" is entirely wrong, since the conditions are ideal in the Sooke area for natural regeneration. It is in the interests of water supply protection and conservation that this program of logging has been endorsed.

Briefly answering your further questions, the territory involved in this proposed sale at Sooke Lake is 2,400 acres, to be logged over a period of fifteen years. The amount of timber involved is about 100 million board feet, and although an upset price has not yet been calculated, an escalator clause will be necessary to cover log price variation over the fifteen-year period. Present market value is upwards of \$2,000,000.

This contract, as in the case of any Board contract, will be approved by the Board's solicitor and the personal supervision of the forester and his staff will see that no damage results to the watershed, as the Board will always have the right to remove the logging company for infraction of the terms of the contract.

PATCHES

Selective logging, as practised in the coastal areas, means "clear-cutting" of small patches, with the surrounding area left intact until natural regeneration has occurred, when another adjoining patch is then logged.

There is no gamble at all in such an undertaking. It is sound water conservation policy to develop and keep a growing forest cover on the watershed, with roads for accessibility to diminish protection difficulties, and an intelligent and logical program preserving the water supply values of the watershed and making maximum beneficial use of the fine resources that now cover the area is, we are sure, to be the final result.

R. DAVIS.

Chief Commissioner, Greater Victoria Water District.

Rangers And The Watershed

The South Vancouver Island Rangers are opposed to any logging of the Sooke Lake Watershed because they are certain that any logging of the Watershed will be detrimental to the interests of the present and the future citizens of Greater Victoria.

Our citizens deserve true facts and it is the ardent wish of the Rangers that public attention will forestall the proposed logging until such time as the experimental era of reforestation has furnished proof that such an undertaking is sound. Our Greater Victoria Water Board consists of seven members. Forestry or knowledge of watersheds are not required qualifications to serve on the Board.

The decision of the Board on such matters as the proposed logging of the Watershed, upon which we all depend, is held in autonomous power by the Board. No public referendum is necessary or invited.

In July, 1949, the Board appointed Mr. Hugh Hodgins, consulting engineer, to make a reconnaissance of the Watershed lands and report to the Board. In April, 1951, Mr. Hodgins submitted his report which states in part "extremely good market conditions warrant removing the over-mature timber on what is commonly called the Rithet Creek unit, which includes the timber to the south of Rithet Creek along the west shore of Sooke Lake. We have already completed a detailed examination of a portion of this area which confirms an initial suggestion that this area should be logged at an early date because of declining wood value due to old age."

At a meeting held by the Greater Victoria Water Board on May 5, 1949, the Rangers made strong protest against any logging on the Sooke Lake Watershed. Dr. C. D. Orchard, Deputy Minister of Forests for B.C., attended the meeting in a technical capacity. Questions which Mr. Ralph Davis might please answer: (1) Following the strong protest by the Ranger spokesman against the proposed logging, did not Dr. Orchard state that there was nothing which the speaker had said with which he could disagree? (2) Did Dr. Orchard not state that in comparison to forestry in Sweden our progress along lines of the proposed logging of the Sooke Lake Watershed is still in its "swaddling clothes"?

In reply you will recall that the Ranger spokesman questioned Dr. Orchard as to why it would not be better for us to outgrow our "swaddling clothes" before experimenting with our main watershed. At this same meeting Mr. Davis assured the Rangers that not more than three million board feet of lumber would be cropped during any one year.

Since that time Mr. Davis has offered reasons for the increased proposed crop first to five million and now to nine million board feet annually.

Is it any wonder that the Rangers now make this most human request—that we wait until we are sure before any logging experiment is undertaken on the Sooke Lake Watershed?

If this gamble of logging goes ahead on our main Watershed it will mean that patches of acreage will be "selected" and denuded clean of all standing timber. The slash will be left undisturbed where it falls and this, in the opinion of the Rangers, will create an added fire hazard to our Watershed. Under the proposed logging plans all the mature, over-mature and ripe timber will be slaughtered along with every standing tree in the "selected" patch.

Our natural forests consist of trees of all ages; this is well in Nature's plan. It seems strange after centuries of growth that suddenly the timber on our main Watershed becomes just ripe for cutting. Strange that this particular time coincides with favorable market conditions and the need of several million dollars to finance a water tunnel to replace the present pipeline from Sooke Lake to Humpback Reservoir.

Very shallow soil conditions exist throughout the Sooke Lake Watershed. Successful reforestation conditions are found only in certain areas such as the Rithet Creek section. Official Water Board photos show a large tract of land in the heart of the Goldstream Watershed to be as barren as when it was logged-off over twenty years ago. The failure to reseed can only be attributed to soil conditions and wind-swept exposure.

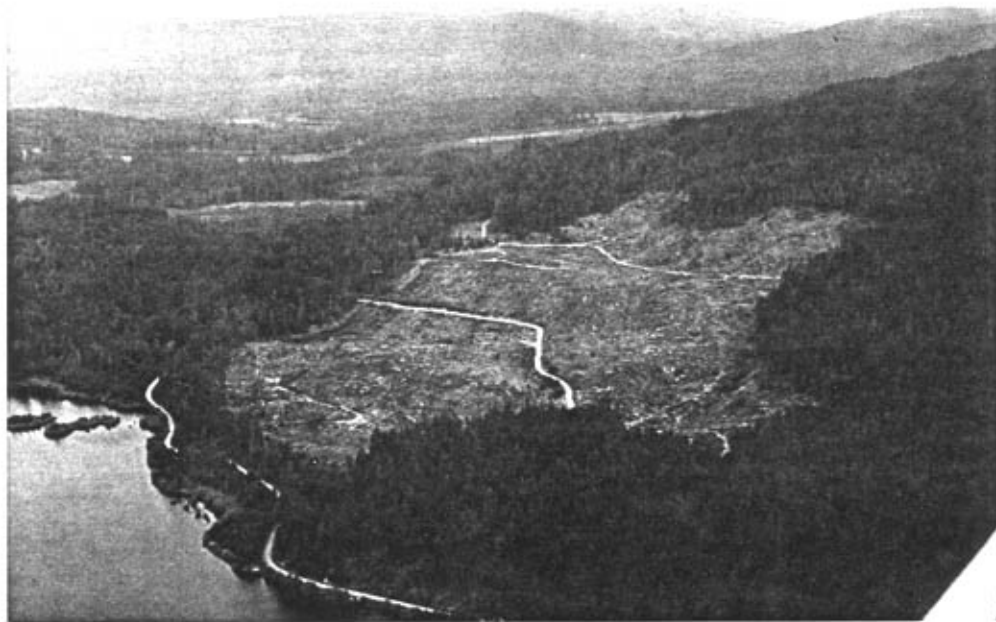
GORDON R. SWORD,
Chairman, South Vancouver Island
Rangers, Inc., Natural Resources Conservation Committee.

THE GVWD : A HOUSE OF CARDS ?

A CRITICAL REVIEW OF LOGGING ACTIVITY
IN VICTORIA'S MUNICIPAL WATERSHED
1924 - 1991

MEHDI NAJARI

DECEMBER 1991



THE SIERRA CLUB OF WESTERN CANADA - VICTORIA GROUP

THE CASE FOR CHANGING THE MANAGEMENT PERSPECTIVE

A REVIEW of FOREST POLICY and PLANNING of the GREATER VICTORIA WATER SUPPLY AREA 1924 - 1991

O.R. TRAVERS R.P.F.

NOVEMBER 2, 1991



THE SIERRA CLUB OF WESTERN CANADA - VICTORIA GROUP

Review gives false sense of security about water

Mehdi Najari

Finally, the report on land use in the Greater Victoria Water District has been released. It is extremely important for citizens of Greater Victoria to consider all the implications of this report.

Ostensibly an unbiased technical review (it contains some positive recommendations such as halting commercial logging in the watershed area and mild criticism of past policies), the report has many shortcomings.

1. The reviewers do not acknowledge that in general, an undisturbed watershed produces the highest quality water.

2. The report does not shed any new light on the issue of logging and its effect on water quality. The report is a selective rehash of already-known information.

3. The report recommends the logging of off-catchment areas. This would keep the logging department with its crews and equipment intact. This recommendation ignores the fact that only 0.1 per cent of the coastal Douglas fir ecosystem in B.C. is protected. The old-growth forest in the catchment and off-catchment areas in GVWD are the last remaining patches of coastal Douglas fir left that can be protected. The people of Canada and B.C. committed themselves to protecting 12 per cent of representative ecosystems by supporting the principle of so-called "sustainable development." It is also urgent to preserve these ar-

reas since only less than 1 per cent of land in the jurisdiction is protected. The off-catchment areas provide an excellent recreation site. Also, protecting off-catchment areas in the Niagara watershed would reduce flooding and benefit fish habitat in Goldstream Park.

4. The reviewers believed that the forestry program successfully met its objectives. The main objective of the forestry program (clearcut logging) as declared by its promoters was to replace a decadent and diseased forest (old-growth forest) by a healthy and vigorous second growth plantation. Today in fact, there are more pathological problems in the second growth stands due to the monoculture silviculture practice and the Alder Eradication Program, than ever before. Clearcutting is responsible for a prevalence of disease, blowdown, insect attack and soil erosion.

5. Under the topic of forest health, the door is left open for logging the catchment areas. I believe that in the near future when public attention is no longer focused on the Water District, the pretext of natural blowdown and root rot disease in Douglas fir forests will be used to justify logging in the watershed; the loophole is so large that logging trucks can easily drive through it. What we

should realize is the fact that diseased and fallen trees are an integral part of the old-growth forest ecosystem and an essential mechanism in a forest's natural life cycle.

6. The report has not fulfilled its terms of reference and contains some inaccurate information (e.g., area harvested since 1949). It is also over-budgeted.

7. The section comparing the Victoria watershed with other municipal watersheds in the Pacific Northwest is highly selective. It says that the Seattle Water Department plans a limited harvesting program but it doesn't tell us that all of the remaining old growth forest will be preserved for protection of water quality, wildlife, and biodiversity and income from logging of second growth will be used to obtain more old-growth forest. The report does not mention that more than 65 per cent of Vancouver's watershed and 55 per cent of Seattle's watershed are in reserve. No reserve has been designated in the Victoria watershed. Less than 27 per cent of the GVWD's lands at present are covered by natural forest; the rest is in the form of man-made plantations.

8. The report's conclusion that the water quality is good is based on very limited and insufficient data and cannot be supported sci-

entifically. More than four years have passed since the water quality division in the GVWD was established, yet we still don't know the extent of the monitoring program, the chemicals that they measure in the samples, the sampling procedure, locations and the frequency of sampling.

9. The reviewers are basically the same people who surveyed land use in Vancouver's municipal watershed, and whose reports have been credited for resumption of logging there.

At the water board meeting Dec. 13, I declared that the real objective of the audit of the land use in Victoria municipal watersheds is to rescue the discredited logging operation of the GVWD. The reviewers have done exactly that. This is why GVWD officials are actively promoting the report and its recommendation and this is why Bill Routley, president of IWA Local 80, gave it full support.

To clear the table for the public it is essential to have debates on the past, present and the future policies and direction of GVWD. To fulfil this, the Sierra Club of Western Canada invites GVWD officials and the reviewers to be part of a series of public debates. Meanwhile, Greater Victorians must be extremely cautious. Although it walks, acts and sounds like a duck, it is only a sophisticated decoy.

Mehdi Najari is a member of the Sierra Club of Western Canada.

Progress in Victoria watershed

THE POLICIES that govern the management of the Greater Victoria Water District are now being updated and refined by the elected representatives from Victoria, Saanich, Oak Bay and Esquimalt. I will give my perspective of progress to date, especially as it concerns the watershed's forests, one of the key issues in this debate.

This policy review has been guided by several reports including the technical review by Terrasol Environmental Consulting prepared in 1992 for the Water District. My direct involvement began in this issue when I wrote the report for the Sierra Club of Western Canada with the title "The Case for Changing the Management Perspective, A review of Forest Policy and Planning of the Greater Victoria Water Supply Area, 1924-1991."

A consensus appears to have been reached on a number of key points:

1. High-quality water means water with cool temperatures, low levels of sediments, low dissolved nutrients and low

By O.R. Travers

bacterial contamination. Old growth forests are best for delivering this kind of high quality water, and merit protection.

2. Managing the forest in the Greater Victoria watershed to focus on timber production and not on water quality, as has been the case to date, is unacceptable.

3. The moratorium on logging in the catchment area should continue.

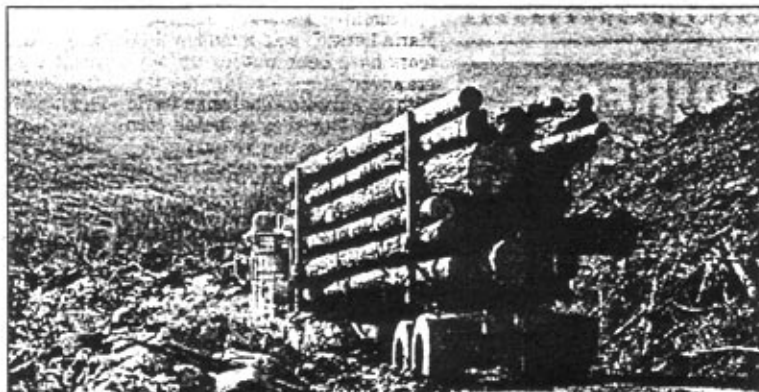
4. A general lack of information is hampering progress in formulating a new management direction.

5. Monitoring the impacts of forestry activities on water quality is essential; and this has now begun.

6. Little thought has been given to medium- and long-term planning to ensure continued availability of high quality water to meet the predicted growth in human population.

7. Increased water rates are likely, not only to encourage water conservation, but also to pay the true costs of providing high quality water.

In the current round of council meetings, staff of the Water District have



Times-Colonist files

■ LOGGING TRUCK removes timber from GVWD watershed last year

asked the elected representatives to "consider recommendations on Risk Management and Land Use." While I agree with this focus, I see some challenges ahead.

The first task is to correctly interpret risk. This includes the assessment of risks from insects and disease, fire hazard and sediment. Recent scientific studies have confirmed that old growth forests are resilient to insect and disease attack (Schowalter, 1990), have low potential for crown fires (Felle, 1992), and have low potential for sediment production (Sollins et al., 1980).

Another task is to design policies and strategies that perpetuate existing old growth forests, and to manage the second growth to restore the old growth attributes and properties that produce high quality water and minimize risk from sediment, fire, insect and disease outbreaks. Specifically this will require adoption of an ecosystem and land use perspective of forest management that is broader and more inclusive than the timber management perspective that continues to dominate much thinking.

We must also learn to think of forests at multiple spatial scales; and to think of the connections at the landscape level of water, wood, sediment and energy. At the stand level we must recognize the role of dead trees in providing habitat for cavity-nesting birds that reduce

harmful insect populations. Also, when dead trees fall into and along streams they not only reduce the erosive energy of fast flowing water and maintain channel stability, but also create pools and riffles that gives rise to high quality fish habitat.

To cut all the dead trees, including blowdown, under the rationization of improving "forest health" is probably counter-productive in creating a diverse and healthy forest ecosystem, although it does salvage the "timber value." We must also learn to think in ecologically relevant time scales, such as the natural fire return interval, and not to have a rate of logging driven solely by time periods that maximize timber production.

This kind of ecological information is essential to achieve the primary objective of managing for high quality water from the desired kind of future forest in the Greater Victoria watershed.

In summary, a renewed commitment to formulate a policy to manage the forests of the Greater Victoria watershed to produce high quality water is now taking shape. However, we must also improve our understanding of how forests ecosystems work, and translate this understanding into meaningful policy and action. This work remains to be done.

O.R. Travers is a private forestry consultant in Victoria.

Science should settle watershed fate — Munro

By Bill Cleverley
Times-Colonist staff
JULY 11/92

The impact of forest management on water quality has to be judged scientifically, former IWA boss Jack Munro told the Greater Victoria Water District.

But when told a Terrasol Environmental Consultant hired by the district recommended an end to commercial logging in on-drainage areas of water district lands, Munro would not endorse the proposal.

"I'm not an expert on the report," Munro, now head of the Forest Alliance of B.C., said when asked about the Terrasol recommendation.

However, Munro said he had toured the Victoria water district. (Related story/D1)

"I can't explain the perfection that goes on in this watershed. You have to go see it," he said.

"I was asked by the people who work there to tour the watershed a couple of months ago. I did that. I must say that I'm very impressed. It's more than a model forest or a modern watershed. . . . It looks great."

Under pressure from environmentalists and some local doctors concerned about water quality, the water board imposed a temporary moratorium on commercial logging until Terrasol could conduct a technical land-use audit of watershed activities.

That report is now being finalized and the board is expected to make a decision on the moratorium at its meeting at the end of July.

"The compatibility of water quality and forest management has to be judged scientifically," Munro said. "If a panel of experts on the topic judges that water quality needs to take priority over our forested areas in catch-

ment areas, then we should listen to them.

"We should also listen when they add that all management activity should be directed to maintain forest health — things that minimize the risk of fire, insects and diseases and wind-blow."

Munro said forest management is a key to maintaining good water, and currently the Victoria district has a problem with root rot throughout watershed lands.

He said virtually every valley in the province is somebody's watershed.

But Sierra Club chairman Vicky Husband said only a small number of valleys are watersheds.

She said logging within the forest district has produced a lot of the root-rot problems by decreasing species diversity.



■ MUNRO: watershed "perfect"

Times-Colonist

THE COLONIST: founded 1858

THE TIMES: founded 1884

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Saturday, May 30, 1992

A chart at last for the watershed

To read an expert's analysis of the state of Greater Victoria's water supply system is to wonder how so many people could have been so deluded for so many years about the management of such a vital resource.

For decades, consumers scarcely gave a thought to the subject of water — where it came from, how its purity was protected, how the watershed lands were managed, whether there was any need for concern about the logging conducted there. If they thought about it at all, they probably assumed that, because their water had always looked clean and tasted pretty good, that's the way it would continue. No problem.

How wrong could they be? The first shock came in the summer of 1988, when suddenly the water tasted and smelled foul. Amid the general alarm, sales of bottled water soared. The subsequent investigation gave perhaps the first significant clue that watershed management was not as efficient as had been assumed.

Then a public utility that had functioned in virtual obscurity, its senior staff recommendations rubber-stamped by a management board made up of municipal representatives, came increasingly under public scrutiny. The water commissioner was fired. Environmental groups and local physicians raised disturbing allegations that water quality was being harmed by the logging which the water district had used to subsidize its operations and costs to consumers.

Still, there was no definitive word and no substantial cause for concern — until a few days ago, when the Vancouver-based Terrasol Environmental Consulting group produced its comprehensive audit of water district land management.

Consultants are not given to producing pungent, blistering prose, especially if they are analysing a client's operations. Bearing that in mind, the Terrasol report's carefully chosen words can be read as an indictment of past and present management policies.

A few excerpts give the flavor: "The Greater Victoria Water District has the potential to be one of the better water suppliers in North America. However, District land use policies and practices are not what is expected of a supplier relying on a non-filtered water supply . . . The watershed control program is rated very poor for a major municipal watershed . . . The other municipal watersheds which were reviewed had far better control of watershed activities even though the level of ownership is less than that of the District . . . historically poor control of construction activities from a water quality standpoint . . . lack of updating and vision in the forest management program . . .".

True, the consultant concludes that water quality is good now, although one is left with the impression that this may be due more to good luck than good management. But at least the Greater Victoria Water Board now has a blueprint for change and renewal, including two key recommendations: that there should be no more commercial logging on catchment lands; and that the largest single risk to water quality, the uncontrolled access via Highway 117 (which skirts Sooke Lake) be removed by road closure or re-routing.

APPENDIX B: EXCERPTS FROM THE SCHULTZ CO. REPORT (*APPRECIATION OF FACTORS ...*)

CHAPTER 5: FOREST MANAGEMENT

A. NEED FOR FOREST MANAGEMENT

A forest management program is an essential part of an over-all Watershed Management Plan. Such a program would provide for the orderly development of the forest resources without jeopardizing water yield and water quality. Benefits accruing from such a program would include financial returns from the harvesting of forest products. Development of the resources would also result in more stable employment for Watershed workers. Forest protection, erosion control, and sanitation would all be considered in a forest management program.

B. SUSTAINED YIELD

Sustained yield management means management to provide continuous production from a forest. It results in that annual production of timber being balanced by the annual net growth. The annual production is called the allowable cut. The indicated allowable cut of the Watershed, based on Hanzlik's formula, is approximately 3.3 million cubic feet per year.

C. AREA OF PRODUCTIVE LAND

"The total area of the watershed is 149,384 acres. The productive lands comprise 61,618 acres or 41 percent of the total area. Under sustained yield management, with an annual harvest of 3.3 million cubic feet, approximately 616 acres, or 0.4 percent of the total area of the Watershed, would be cut over each year."

D. INFLUENCE OF VEGETATION

2. Investigations of the logged and/or burned areas in the Capilano Valley failed to show that erosion was appreciably increased by logging. Any erosion that took place subsequent to burning was slight and has now been stabilized.

Current logging operations in the adjacent Furry Creek drainage are not causing accelerated erosion of the soil except where roads have been constructed without proper consideration of soil properties. The accumulation of slash coupled with the natural growth of bush, ferns, and moss provide adequate soil protection after the timber is removed. Regeneration appears to be satisfactory in the logged areas where the slash was not burned."

E. EROSION

Slides and stream cutting are natural forms of erosion found throughout the Watershed. Although current erosion in the Watershed is not extensive, a planned program of erosion control would reduce the turbidity of the water supply that occurs during flood periods.

FORESTRY

The role of forests in watershed management may be summarized as follows:

1. Forests in this region do not have any proven effect on precipitation, either as to amount, intensity or character. The precipitation pattern in British Columbia is a function of the movement of moist air masses in relation to the topography.
2. Forests use water. The amount used depends upon tree species and availability of water. Consumption per acre of forest may vary from one-to five-acre feet of water per year. The rate of consumption varies with the season. Reducing the number of trees in a watershed would increase the water yield during dry periods.
3. Forests intercept precipitation. The percentage of precipitation lost in this manner depends upon the type and intensity of precipitation and the species, size, and density of the trees.
4. Forests reduce evaporation. Forest soils are shaded and protected from wind, thus water or snow evaporation losses are less than for open areas.
5. Forests protect the soil. The interception of precipitation by the foliage, together with the accumulation of litter on the ground, protects the soil from raindrop impact. Short vegetation will reduce the impact of raindrops better than tall vegetation. The trees and their system of roots prevent surface runoff from eroding the soil. Trees also prevent snow from sliding on steep slopes.
6. Forests help to keep soils porous in winter. Temperature extremes are moderated under a forest cover. Forest litter, when frozen, is more pervious to water than exposed soil; thus, snow melt is better able to percolate into soil under a forest cover.
7. Forests improve permeability of soils. The organic litter on forest floors provides favourable conditions for biological activities which increase the porosity of the soil. Humus, which develops from decayed vegetation, is an important water retentive component of soil. The effectiveness of vegetation in improving water yield lies mainly in its ability to improve the permeability of soil.
8. Forests keep water cool. Shade provided by forests reduces the temperature rise of water in streams. Water from forested areas is thus cool and potable.
9. Forest influence is limited. Vegetation plays a major role in interception of rain from small storms but only a minor role in the interception of rain from major storms. The natural water storage capacity of thin mountain soils is limited. When the amount of precipitation from a major storm exceeds the storage capacity, then quick surface runoff must occur regardless of type of vegetative cover.
10. Forests can be manipulated to change the regimen of water yield. Unconsumed water on a watershed has no value. Therefore, watershed management plans must be formulated to balance stream flow with

consumption requirements. The natural limitations for water storage in the soil profile controls the amount of water that can be retained for dry weather stream flow.

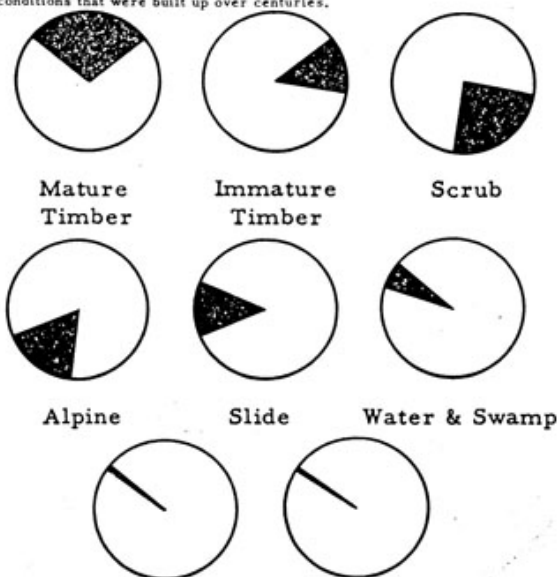
Recent experiments on the effects of cutting and leaving vegetative cover on the ground indicate that the total yield of usable water can be increased by this method. An experiment on the effect of cutting riparian vegetation indicates that mid-summer stream flow can be increased by cutting the vegetation.

At the upper elevations snow storage is an important factor in water conservation. Hydrology experiments in the Rocky Mountains have shown that initial snow storage is increased by thinning the timber stands.

Experiments on water yield show that on shallow soils, the optimum forest cover is comprised of stands of small trees.

Forests can provide revenue for watershed management through the sale of forest products.

Forests can be a liability to watershed management. A mature forest is ideal fuel for a fire which could destroy in a day the favourable soil conditions that were built up over centuries.



AREAS BY FOREST COVER TYPES FOR TOTAL WATERSHED

Classification	Area (Acres)	Percent
Mature timber	43,540.0	29.1
Immature timber	18,078.0	12.1
Scrub	35,235.0	23.6
Alpine	27,251.0	18.2
Slide	17,062.5	11.5
Water and Swamp	6,125.0	4.1
Rock	1,322.5	0.9
Cleared	770.0	0.5
TOTAL	149,384.0	100.0

AREAS BY OWNERSHIP AND FOREST COVER TYPES FOR TOTAL WATERSHED

TENURE & OWNERSHIP		AREA IN ACRES								Total	Percent
		Mature Timber	Immature Timber	Scrub	Alpine	Slide	Water & Swamp	Rock	Cleared		
I.	GREATER VANCOUVER WATER DISTRICT										
	999-Year Lease	33,908.5	7,779.5	31,834.0	25,662.5	15,615.5	4,545.5	904.0	75.5	120,325.0	80.6
	Crown Grants	6,755.5	8,422.5	1,650.0	336.5	392.0	1,496.5	415.5	338.5	19,807.0	13.2
	Total Held by G. V. W. D.	40,664.0	16,202.0	33,484.0	25,999.0	16,007.5	6,042.0	1,319.5	414.0	140,132.0	93.8
II.	OTHER AGENCIES										
	Mineral Claims Britannia Mining and Smelting Co., Limited Lynn Valley Copper Co. Ltd.	1,140.0	-	1,524.0	1,179.0	962.0	81.0	-	-	4,886.0	3.3
	Timber Licences & Berths Canadian Collieries (Dunsmuir) Ltd. The Canadian Bank of Commerce Britannia Mining and Smelting Co., Limited Totem Pole & Piling Ltd. Maple Ridge Lumber Co. Ltd.	1,698.0	1,762.0	227.0	73.0	93.0	2.0	3.0	27.5	3,885.5	2.6
	Crown Grant J. Moore	3.0	7.0	-	-	-	-	-	-	10.0	-
	Rights-of-Way British Columbia Electric Company Limited	35.0	107.0	-	-	-	-	-	328.5	470.5	0.3
Total Held by Other Agencies		2,876.0	1,876.0	1,751.0	1,252.0	1,055.0	83.0	3.0	356.0	9,252.0	6.2
TOTAL WATERSHED		43,540.0	18,078.0	35,235.0	27,251.0	17,062.5	6,125.0	1,322.5	770.0	149,384.0	100.0

CHAPTER 10: HYDROLOGY SURVEY FINDINGS

B. INDEX OF WATER YIELD

The records show that in the Capilano Valley the ratio of runoff to rainfall was lowest during and immediately after logging. The water yield per unit of rainfall gradually increased during the ten-year period following the end of logging; subsequently, the water yield per unit of rainfall has decreased.

C. UNIT PEAK FLOW

The accompanying graph showing Unit Peak Flow indicates that in the Capilano Valley during and immediately after logging the rate of surface runoff was not increased. In fact, the higher Unit Peak Flow occurred after regeneration reforested the logged and burned areas. This indicates that the vegetative cover in the Watershed has a limited effect on the rate of surface runoff during prolonged and torrential rainfalls.

[In the final chapter they conclude: "The normal rate of runoff is not immediately effected by logging operations. As logged areas become covered by regeneration the rate of runoff increases. During prolonged and torrential rainfalls vegetative cover has little effect on the rate of runoff."]

CHAPTER 11: FIRE PROTECTION

A. CURRENT FIRE PROTECTION ORGANIZATION

... since the Watershed is being utilized as a source of water supply, the value is greater than that of an area which is being utilized for timber resources alone. Fire would do equal damage to the water storage capacity of the soil whether merchantable or non-merchantable timber was burned. Therefore, it is sound policy to maintain a more intensive fire protection organization in the Watershed than would be necessary for an area managed solely for timber resources.

C. RECOMMENDATIONS TO REDUCE HAZARDOUS CONDITIONS

1. The major drainages of the Watershed should be opened up with access roads and trails to permit the rapid succession of fire in any part of the Watershed. The anticipated long period of use warrants well-constructed roads and trails. Strategically located helicopter-landing areas should be selected, cleared and maintained for emergency use.
2. A snag-felling operation should be inaugurated on all accessible areas in the Watershed. The initial felling operation should be concentrated on areas of fire-killed timber and in areas where lightning strikes are known to occur.

CHAPTER 12: DISEASE AND INSECT PROTECTION

A. SIGNIFICANCE OF FOREST DISEASES AND INSECTS

To date, the timber stands in the Watershed have lost a greater volume of wood to insect and disease attacks than has been destroyed by fire. This loss from insects and disease is serious from the aspect of wood utilization but is of minor consequence from the aspect of water yield. Indications are that the areas which support stands of killed timber have greater water yield potential than those supporting living, mature forests.

However, dead standing trees are an acute fire hazard and should not be allowed to remain. Insect infestations could spread into the Watershed from adjacent forest areas and cause extensive damage.”

B. DISEASE

The timber in the Watershed are generally overmature. Attack by wood- decaying fungi is the greatest cause of loss in these stands. All stands are affected but damage is most severe in hemlock.

It is not economically feasible to control diseases in the present stands. Pathologically, the best forest management policy would be to harvest the present stands of overmature timber and encourage the growth of even-aged stands of young trees.

D. INSECTS

The Hemlock Looper, a defoliating insect, most commonly attacks hemlock but will also attack Douglas fir, balsam and cedar.... These outbreaks have left areas of standing dead timber.

Regeneration is dense beneath this insect-killed timber. From the aspect of water yield, these areas have probably been improved because transpiration losses are reduced and snow storage capacity is increased.

Better access to all parts of the Watershed would enable better inspection for signs of insect or disease outbreaks. The Water District should maintain history maps of the entomological and pathological infestations within the Watershed and in adjacent drainage basins. This history information would be basic data in planning salvage operations and protection measures.

The danger from insects and disease is one of timber loss and increased fire hazard, rather than the depreciation of water yield potential. At this time the chances of an outbreak of insects in the Watershed are considered to be average for the region. The chances of an epidemic will increase as the overmature stands become more decadent.

CHAPTER 14: FACTORS INVOLVED IN WATERSHED MANAGEMENT

A. ADMINISTRATION

Municipal watershed management plans need not be controversial issues. The ultimate success of watershed management programs is dependent upon public understanding of the problems and objectives. The popular belief that man can do nothing about managing natural water supplies is an erroneous and misleading concept. The forest cover of a watershed can be manipulated to improve the water yield.

B. HYDROLOGY

The science of hydrology, dealing with the origin and distribution of water as a natural renewable resource, is still relatively undeveloped. The application of the principles of hydrology to the management of watersheds is almost entirely new.

The chief reason why so little data have been published about forest- stream flow relations is due to a lack of experimental watersheds. Suitable experimental areas that will meet requirements of geology, soils, topography, vegetative cover, and rainfall distribution are difficult to find. Experimental watersheds are expensive to develop and difficult to operate.

A watershed research project should be organized in co-operation with the Department of Lands and Forests. The research project could be financed from the sale of timber from the watershed.” Chapter 15 dealt with how other watersheds, notably the Seattle District watershed, use “management” programs.

Logging on the Cedar River Watershed commenced over 50 years ago and is still in progress. A controversy arose in 1943 as to whether logging should be permitted or not. A detailed examination by a commission concluded that with the type of topography, soils, forest cover, climate and other circumstances peculiar to the watershed, controlled logging should be continued.

... A well maintained system of roads provides ready access to all parts. A snag-felling program is reducing the fire hazard from lightening strikes.... Areas of overmature timber area being replaced with stands of thrifty young trees which are resistant to attacks from insects and diseases.

Field examinations were made of both the Cedar River Watershed and the Watershed of the Greater Vancouver Water District. The latter has rougher topography, poorer timber, and less favourable soil characteristics than the Cedar River Watershed but is suitable for controlled secondary usage.” The chapter continued with specifics of road building in the Seattle watershed and other operations.

CHAPTER 16: SUMMARY AND RECOMMENDATIONS

F. WATERSHED MANAGEMENT

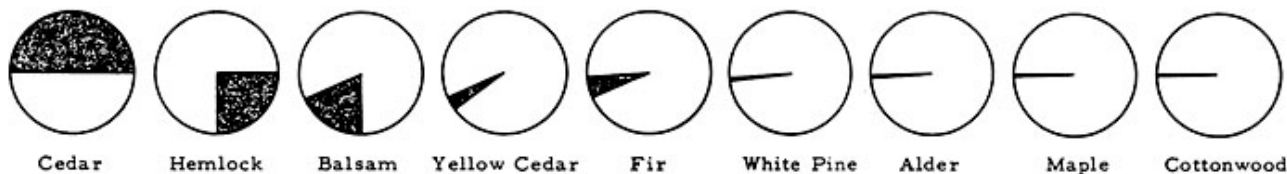
Managers of watersheds have been hampered by a lack of authoritative, quantitative measurement of the effects of forest management on water yield. Although data is meagre, research indicates that the perpetuation of a virgin forest cover is not the most satisfactory management policy for a watershed in this region. A study of hydrology indicates that under certain conditions, manipulation of the forest cover can improve the regimen of water yield.

Forest management practices in the Watershed are restricted as a result of the terms of the present 999-Year Lease.... This provision of the 999-Year Lease should be re-negotiated, or a special Forest Management Agreement should be entered into, so that a comprehensive Watershed management plan can be initiated.

NET MERCHANTABLE TIMBER VOLUMES BY OWNERSHIP AND SPECIES FOR TOTAL WATERSHED

TENURE & OWNERSHIP		VOLUME IN C. CU. FT.									Total	Percent
		Red Cedar	Hemlock	Balsam	Yellow Cedar	Fir	White Pine	Alder	Maple	Cottonwood		
I.	GREATER VANCOUVER WATER DISTRICT											
	999-Year Lease	1,071,748	470,819	262,237	85,368	98,381	567	381	89	61	1,989,651	81.6
	Crown Grants	122,387	99,596	72,309	3,316	27,255	25	938	87	-	325,913	13.4
	Total Held by G. V. W. D.	1,194,135	570,415	334,546	88,684	125,636	592	1,319	176	61	2,315,564	95.0
II.	OTHER AGENCIES											
	Mineral Claims Britannia Mining and Smelting Co. Limited Lynn Valley Copper Co. Ltd.	17,443	17,209	27,566	1,241	202	-	-	-	-	63,661	2.6
	Timber Licences and Berths Canadian Collieries (Dunsmuir) Ltd. The Canadian Bank of Commerce Britannia Mining and Smelting Co., Limited Totem Pole & Piling Ltd. Maple Ridge Lumber Co. Ltd.	6,386	27,827	18,479	1,081	1,666	2	-	61	2	55,504	2.3
	Crown Grant J. Moore	53	24	59	-	1	-	1	-	-	138	-
	Rights-of-Way British Columbia Electric Company Limited	1,469	213	125	-	101	-	-	-	-	1,908	.1
	Total Held by Other Agencies	25,351	45,273	46,229	2,322	1,970	2	1	61	2	121,211	5.0
TOTAL WATERSHED		1,219,486	615,688	380,775	91,006	127,606	594	1,320	237	63	2,436,775	100.0

Note: 1 cubic foot = approximately 6 board feet
C. cu. ft. = hundreds of cubic feet



NET MERCHANTABLE TIMBER VOLUME BY SPECIES FOR CATCHMENT BASINS

Species	Capilano Catchment Basin		Seymour Catchment Basin		Coquitlam Catchment Basin		Port Moody Conservation Reserve	
	Volume (C. cu. ft.)	Percent	Volume (C. cu. ft.)	Percent	Volume (C. cu. ft.)	Percent	Volume (C. cu. ft.)	Percent
Cedar	432,800	45.4	430,761	51.3	353,282	58.0	2,643	7.9
Hemlock	264,599	27.8	191,095	22.8	145,557	23.9	14,437	43.1
Balsam	130,751	13.7	162,307	19.3	75,891	12.4	11,826	35.3
Yellow Cedar	72,198	7.6	12,151	1.5	3,189	0.5	3,468	10.4
Fir	52,436	5.5	42,078	5.0	31,989	5.2	1,103	3.3
White Pine	173	-	415	-	6	-	-	-
Alder	452	-	841	0.1	27	-	-	-
Maple	-	-	87	-	150	-	-	-
Cottonwood	-	-	-	-	63	-	-	-
TOTAL	953,409	100.0	839,735	100.0	610,154	100.0	33,477	100.0

Note: 1 cubic foot = approximately 6 board feet.

B-6 C. cu. ft. = hundreds of cubic feet.

CLASSIFICATION AND DESCRIPTION OF TIMBER

A. CLASSIFICATION

Timber stands are classified into two general groups, mature timber and immature timber. These two general groups are subdivided into forest types. Each type is an aggregate of trees possessing sufficient uniformity as to age, species composition or volume density to be distinguishable from adjacent groups of trees.

The mature timber is segregated into types of similar species composition and volume density. The species which are shown in the type description constitute at least 20 percent of the estimated total volume in the type.

The immature timber is segregated into types of similar age classes and species composition. Stem frequency, rather than volume density, is used as a basis for type classification.

B. DESCRIPTION OF TIMBER

The timber in the Watershed of the Greater Vancouver Water District is generally overmature. The incidence of snags throughout the timber stands is high. The following merchantable species are found in the Watershed: western red cedar, western hemlock, balsam, yellow cedar, Douglas fir, western white pine, red alder, broadleaf maple and black cottonwood.

1. Western Red Cedar

Cedar is the dominant species in the Watershed. The trees are usually large and of good form. Most of the cedar is overmature. Spike-tops and butt rot are common defects.

The net merchantable volume of cedar is made up mainly of large trees which will yield good quality saw logs and shingle-bolt material. Cedar snags provide suitable material for shakes. Pole cedar is found in limited quantities.

Cedar is generally utilized in the manufacture of shingles, shakes, poles, exterior siding, interior finish lumber, boat lumber and light construction lumber. Minor volumes are used for pulpwood.

Cedar comprises 50.1 percent of the estimated total net volume in the Watershed.

2. Western Hemlock

Hemlock is found in all mature timber types in the Watershed. Centre rot and dwarf mistletoe are common defects. The overmature hemlock is very susceptible to decay. Much of the hemlock of sawlog size is only of pulp grade because of decay. Some 20 percent of the net volume is of good sawlog quality.

Hemlock is generally used in the manufacture of pulp, general construction lumber, treated railway ties and interior finish lumber. Hemlock comprises 25.3 percent of the estimated total net volume in the Watershed.

3. Balsam

Balsam is usually confined to the moist slopes and higher elevations. The trees are generally of good form.

Balsam is principally utilized as pulpwood although some of the higher quality logs are sawn into light dimension lumber. Balsam comprises

15.6 percent of the estimated total net volume in the Watershed.

4. Yellow Cedar

The yellow cedar is generally small and of poor quality. Centre rot is a prevalent defect. This species is generally confined to high elevations and poor sites.

Yellow cedar is a very durable wood which is utilized for boat lumber, marine piling, interior finish lumber, construction lumber, and in the manufacture of battery separators.

Yellow cedar comprises 3.7 percent of the estimated total net volume in the Watershed.

5. Douglas Fir

Douglas fir generally grows on well-drained slopes that have a southerly aspect. The fir trees are generally of good form and free from defect.

Douglas fir is used in the manufacture of light and heavy dimension lumber, plywood, poles, piling and finished lumber. Most of the fir in the Watershed is of peeler and good sawlog quality. Some poles and piling are found in the thrifty stands of second growth. Fir comprises 5.3 percent of the estimated total net volume in the Watershed.

6. Western White Pine

A few isolated trees of white pine remain. This species is being killed off by the white pine blister rust. White pine is generally utilized in the manufacture of pattern stock, sash and door stock, and light dimension lumber.

7. Red Alder

Alder frequently usurps cut-over land where moist soil conditions exist. Stands of alder are commonly the principal species found adjacent to streams. Where alder and coniferous trees grow together, the coniferous species will normally eventually form a closed canopy and suppress the alder.

Under favourable economic conditions alder can be utilized in the manufacture of furniture stock. At the present time the market for alder logs is poor.

8. Broadleaf Maple

Maple grows best on areas of cut-over land where the soil is deep and well-drained. Maple is rarely found in the Watershed.

Maple is generally utilized for interior finish lumber and furniture stock.

9. Black Cottonwood

Cottonwood grows in the same general site conditions as alder. Cottonwood is utilized in the manufacture of plywood and pulp.

APPENDIX C: EXCERPTS FROM THE WRITTEN SUBMISSIONS

1. INTRODUCTION

The oral and written presentations for the Water Committee at the public forum at Robson Square on May 2nd and 3rd, 1991, and those papers submitted to the Water District before and after the forum, are worthy of attention.

There were those who, to various degrees, favoured the present GVWD logging program and trusted the Panel's investigation and their advice. There were those, from various levels of concern, in favour of greatly reducing the present logging program; those who advocate a moratorium - a time to contemplate and investigate what is exactly occurring in our watersheds; and those who believe that all logging should discontinue. There are, so to speak, two exceptions: those still in favour of building a highway through the Capilano, and someone promoting real estate development in the watersheds.

Before looking at excerpts from the presentations, it is interesting to take a quick survey of who is advocating logging (pro-active management) to continue in the watersheds:

The IWA local 1-217, Fletcher Challenge, Share Our Resources, Marsh Logging, the Association of B.C. Professional Foresters, the GVRD Employee's Union, a former logger for the Capilano Timber Co., Canadian Women in Timber (Lower Mainland Branch), Canadian Women in Timber (National), International Forest Products (2 submissions from the vice president), the Council of Forest Industries (B.W. McCloy), Stewart and Ewing Associates - Seafor (professional foresters), New Westminster and District Labour Council, Bill Dumont (Western Forest Products, Port MacNeil), Council of Forest Industries, Seymour Demonstration Forest employees, Ministry of Forests Chief Forester (John Cuthbert), Interior Lumber Manufacturers Association, T.D. Backhoe Service, watershed road construction and maintenance worker, Share Our Forests, a heavy equipment operator, Registered Professional Foresters living in the Lower Mainland and other B.C. localities.

The readers should be aware that there is presently a strong lobby taking place by the forest industry for logging in the Greater Vancouver watersheds to continue. There seems to be a lot at stake, so they say. The decision for its discontinuance could affect 80 watersheds? or more? I wonder. Single use of watersheds (ie., just for water supply) are unacceptable according to the position of the Council of Forest Industries. Sounds a lot like the arguments posed in the 1920s.

I have included here some information from the Queen Charlottes branch of the "Share" organization (Share the Rock, STR). Apparently the membership is being urged to get involved in a letter writing campaign to urge elected officials (26 mayors, aldermen, directors) and newspapers in the Lower Mainland to support the continuance of logging and vote against the question of a moratorium of logging in the Greater Vancouver watersheds (list of their names and addresses below). There is obviously a provincial lobby to this end. The citizens of Greater Vancouver ought to be concerned over the reality and possible influence of such an inter-industry lobby.

Here on the Charlottes we can well appreciate the implications such a decision could mean. NO LOGGING IN WATERSHEDS = NO LOGGING PERIOD.

We have the addresses of the board members which are as follows:

Mayor Pamela M. Blackman Village Hall 2697 Sunnyside Rd. Anmore, B.C. V3H 3C8	Mayor Ralph E. Drow Village Hall 4084 Badwell Bay Rd. Belcarra, B.C. V3H 4P8	Ald. Derek R. Corrigan Municipal Hall 4949 Canada Way Burnaby, B.C. V5G 1M2
Ald. Douglas P. Drummond Municipal Hall, 4949 Canada Way Burnaby, B.C. V5G 1M2	Mayor Lou Selcora Municipal Hall 1111 Brunette Ave. Coquitlam, B.C. V3K 1E9	Mayor Elizabeth L. Johnson Municipal Hall 4450 Clarence Taylor Crescent Delta, V4K 3E2
Dir. Iva V. Mann 1808 Aondia Rd. Vancouver, B.C. V6T 1R3	Dir. C. Ross Carter Eagle Cliff Road Bowen Is. B.C. V0N 1G0	Dir. William E. Lewis 1300 Ioco Rd. Ioco, B.C. V3H 2X2
Ald. Gayle M.E. Martin City Hall, 5549-204th. St. Langley, B.C. V3A 1Z4	Mayor Leonard M. Trauboulay City Hall, 2580 Shaughnessy St. Port Coquitlam, B.C. V3C 2A8	Mayor David T. Driscoll City Hall, 2425 St. John's St. Port Moody, B.C. V3H 3E1
Mayor Greg C. Halsøy-Brandt Municipal Hall, 6911 No. 3 Rd. Richmond, B.C. V6Y 2C1	Ald. Douglas K. Sandberg Municipal Hall, 6911 No. 3 Rd. Richmond, B.C. V6Y 2C1	Mayor Robert J. Boas Municipal Hall, 14245-56th. Ave. Surrey, B.C. V3W 1J2
Ald. William A. Fornloh Municipal Hall, 14245-56th. St. Surrey, B.C. V3W 1J2	Mayor Gordon M. Campbell City Hall, 453 West 12th. Ave. Vancouver, B.C. V5Y 1V4	Ald. George J. Pail City Hall, 453 West 12th. Ave. Vancouver, B.C. V5Y 1V4
Ald. Libby Davies City Hall, 453 West 12th. Ave. Vancouver, B.C. V5Y 1V4	Ald. Gordon H. Price City Hall, 453 West 12th. Ave. Vancouver, B.C. V5Y 1V4	Ald. G. Bruce York City Hall, 453 West 12th. Ave. Vancouver, B.C. V5Y 1V4
Mayor Mark W. Sager Municipal Hall, 750-17th St. West Vancouver, B.C. V7V 3T3	Mayor Gordon J. Hogg City Hall, P.O. Box 188 White Rock, B.C. V4B 5C6	Mayor C. J. Belle Morse Municipal Hall, 11995 Hancy Place Maple Ridge, B.C. V2X 6A9
Ald. Christine H. Lamb Municipal Hall 200 - 32315 South Fraser Way Clearbrook, B.C. V2T 1W7	Mayor C. J. (Bud) Tiedeman Municipal Hall, 12007 Harris Rd. Pitt Meadows, B.C. V0M 1P0	

Some local media that could be contacted are:

Vancouver Sun 2250 Granville Street Vancouver, B.C. V6H 3G2	The Province 2250 Granville Street Vancouver, B.C. V6H 3G2	The Maple Ridge News 22328 - 119th Avenue Maple Ridge, B.C. V2X 2Z3
Fraser Valley Record 33047 First Avenue Mission, B.C. V2V 1G2	North Shore News 1139 Lonsdale Avenue North Vancouver, B.C. V7M 2H4	The Leader Box 276 Surrey, B.C. V3T 4W8

LETTER WRITING CAMPAIGN (SHARE THE ROCK [STR], SANDSPIT, B.C.)

In this section we try to inform members of the different issues that, while not directly involving us here on the islands, can. These issues, through misguided action taken by politicians in other regions can and do affect the way things are done here, by precedent setting policies decided on mostly how much public pressure is brought to bear in the form of LETTERS. We urge every member to read over the following information and then let fly!!!

The Greater Vancouver Watershed Issue:

This problem was brought to light back when S.T.R. was first formed and we instituted a letter campaign then and it seems there was only enough support raised to get the GVRD to postpone the vote on the moratorium of logging until Jan. 15th, 1992. The loggers and residents who live and work in the GVRD watershed have, through Share B.C., asked us to assist them in a letter writing campaign to the mayors and aldermen who serve on the board and have a vote. As well it was felt to the local media might help their cause.

Although it is rather late in this particular ballgame, there is still the possibility of altering enough opinions at the Board so the final score could be in our favour. The Western Canada Wilderness Committee has been very active promoting a moratorium of all logging in the watershed. If they win this one, it is expected that they will use it as an excuse to promote a shutdown in all watershed logging in the province. The studies that have been undertaken have proven that logging has not adversely affected water quality. WC2 has spent a great deal of time discrediting the experts and have taken the position that it must be shown that it improves water quality. As well, they have been calling for a moratorium, as they always do, to study the impacts of logging. Unfortunately, their efforts seem to be paying off.

The following may be useful in your letter;

1. All scientific evidence shows that logging and roadbuilding have not caused a decline in water quality. Even WCWC concedes that.
2. Any moratorium in the GVRD watersheds will be a permanent halt to logging in that area. There are numerous instances throughout the province.
3. Any halt in the GVRD watersheds, admittedly some of the best logging in the province; would set a dangerous precedent to be used by WCWC and other organizations as a justification for halting logging everywhere. The GVRD board members are generally not aware of this possibility.
4. WCWC is on record as saying they want to STOP ALL OLD GROWTH, CLEARCUT, AND WATERSHED LOGGING in the province. That means everything! The domino effect of this decision could have serious implications for the whole province.
5. There are socio-economic implications for the families of the workers and the spinoff jobs generated from logging in the watershed. This impact is necessary in light of the lack of scientific evidence that logging harms water quality.
6. Nature is unpredictable. Whatever man does, Nature can undo it. The GVRD watershed, like virtually every other area on the B.C. Coast, is subject to exceedingly heavy rainfalls. These rainfalls turn all creeks and rivers brown, regardless of whether there has been logging in the catchments or not.

Here on the Charlottes we can well appreciate the implications such a decision could mean. NO LOGGING IN WATERSHEDS - NO LOGGING PERIOD.

2. THE WRITTEN SUBMISSIONS (A Selection)

#3. On December 17, 1990, January 14, 1991, and again on February 18, 1991, Council considered the matter of logging in the North Vancouver watershed areas. Council subsequently directed that all appropriate authorities be advised that Council is opposed to logging in the watershed areas in North Vancouver. [The Corporation of the District of North Vancouver]

#7. ...I am impressed with the scope and thoroughness of the report. Any changes to the program should be carefully considered and be based on arguments of fact and professional advice. When we are discussing the quality of life of future generations, we must remain objective and not be swayed by others' use of hyperbole and emotional tripe. Water quality, not timber or wilderness, is the primary object. Water management practices must be directed towards the development of a stable, multi-aged forest cover containing a mosaic of even aged stands with a diversity of tree species. A 'hands off' approach is not an option. [Dave Harrison]

#9. Analysis of data indicated that quantities of landslide materials on clear felled slopes were not statistically different from quantities moved on undisturbed slopes; however, the mean weight of debris moved per unit area on logged slopes was approximately 4.5 times larger than the equivalent mean weight on forested slopes. The \$500 million water treatment program recently proposed by GVWD has, as its prime reason, the need to raise our water quality to existing national standards. Turbidity is the major problem which is not an aesthetic problem but one that also hinders the effectiveness of chlorination, thus allowing the possibility of Giardiasis. [City of North Vancouver Report, B.A. Hawkshaw, City Clerk]

#11. The Western Canada Wilderness Committee (WCWC) strongly suggests that if there is any doubt about the advisability of clearcutting and roadbuilding in the watersheds, that there are no grounds whatsoever for continuing such activities. We further suggest that it should be incumbent on the GVWD to prove that what they are doing in the watersheds is maintaining or improving water quality, rather than for organizations such as WCWC to prove otherwise. Dr. Tim Schowalter of Oregon State University (states)... "Contrary to numerous assertions, old growth forests are highly productive and remarkably resistant to potential pests.... By contrast, managed forests are often highly susceptible to a variety of pests." Constructing roads to provide access for fire fighting is a spurious reason because the roads would not be built if there was not profitable logging to be done. As the main fire hazard in the watersheds since 1961 has been the sun-dried logging slash created from clearcutting, and the slash-fire escapes that have occurred as a result of the slash-burning. What these statements make is that the response to this insect outbreak has been clearcutting, NOTWITHSTANDING that the woolly aphid kills only balsam and LEAVES NUMEROUS HEALTHY CEDAR AND HEMLOCK in the effected stands. A much more appropriate response to the balsam woolly aphid would therefore have been PARTIAL CUTTING. This would have removed the effected balsam, allowed natural regeneration to have occurred, and maintained the water quality preserving function of the old growth forest. The old-growth forests in the watersheds are relatively healthy, and the GVWD has blown the importance of insect attacks and natural erosion out of all proportion to the actual threat to water quality. ... Jerry Franklin, chief ecologist of Region 6, US Forest Service (states) ... "Course woody debris - the importance of standing dead trees, and especially downed logs - is an important aspect of



(forest) structure. Reflecting on my career as a forester, I find it hard to believe that it took me so long to appreciate the values that dead wood structures might have in a forest.” Finally, we are calling for a permanent ban on clearcutting and steep slope roadbuilding in our watersheds, with only extremely discreet partial cutting to be allowed in the watersheds in future, if it can be proven that it can be done without accelerating soil erosion or causing ecological damage. [Mark W. Wareing, Western Canada Wilderness Committee]

#12. An independent public inquiry into the impacts of past and projected clearcut logging on water quality, forest productivity and ecosystem health should be called and consideration should be given to selection logging in the area, only if it is proven that it will not diminish water quality. [E. Thor-Larsen & P. Kerr]

#14. As an industrial forester and a resident of the lower mainland I am dismayed at the level of hysteria and knee jerk reaction emanating from various councils in regard to water quality and logging in the GVWD area. I am particularly concerned that the WCWC is stirring the pot on this issue as this group is well known for their penchant to create crisis and controversy. In short, my review of the evidence has convinced me that logging in the GVWD is not the culprit it has been made out to be and there is no logical reason why it should not continue. [F. Lowenberger]



#15. In the Watershed Reserve Area approximately 35,634 hectares (62%) of the existing forest cover is retained. Are the benefits of harvesting & managing the remaining 38% of the watershed area sufficient to meet the objectives as outlined in the report? Item 24 of the Amending Indenture states “...the highest priority in the management of the lands to which this Amending Indenture applies must be given to water supply purposes ...” It is difficult to ascertain whether the GVWD is managing the forests in the watershed area with the main objective of maintaining water quality or whether there is another goal of equal importance, which is the financial sustenance of the GVWD’s programs through logging activities. Will the ecological review recommended by the panel include habitat destruction in old growth forests & its impact on wildlife in the area.

...financial statements are not provided. The GVWD should be required to provide a financial statement as part of the report so that cost comparisons between logging activities in the watershed and other alternatives to reduce turbidity in the drinking water supply can be made. [Kelvin Higo, Chief Public Health Inspector, Environmental Health Division, Township of Richmond]

#16. I feel that the Watershed Management Program of the GVWD is very well done. A moratorium is useless, unnecessary and merely a tool used by rabid environmentalists to completely halt any positive management of these areas. It was unfortunate that we had a record rainfall this past winter that made our water less than perfect, that is all that it was, unfortunate, nothing to do with the quality of management or the timber harvesting that takes place in the watersheds. [Dianne Gudlaugsson]

#17. The special interest group which is lobbying for a cessation of logging in the watersheds is, in my opinion, using questionable tactics and information to further their goal, a goal which is not good management of the water district but the culmination of all logging in the watersheds. The continuation of logging in the watersheds is the best management practice, a practice that will give the greatest benefit to all the residents of the area. [John Leasing]

#18. I am a contractor whose company has been involved in the dumping, sorting and booming of timber harvested in the watershed since that operation began more than thirty years ago. ... I also do not believe that the present operation is detrimental to the watershed, or that discontinuing it would in any way improve the quality of the watershed. I am particularly concerned that whatever the decision, it should be made only after detailed consideration of all relevant facts, and not as the result of emotional appeals to “leave the forest in its natural state” which are very popular these days. In a watershed the presence of overmature timber and timber dead and dying from insect infestation presents an extreme fire hazard. It is essential to have a network of roads through the watershed in order to reach the areas where the situation exists, for the purpose of fire control and the monitoring of vegetation, water quality, and slope stability. It is my belief that the GVWD watershed should be a model for all watersheds in Southwestern British Columbia, and that it will be just such a model if the recommendations in the current Watershed Management Evaluation and Policy Review are followed. Representatives of certain organizations who are campaigning to have the timber harvesting program in the watershed discontinued are quoted as claiming that their groups should be allowed to conduct an “independent” evaluation of the program. If such a study is allowed, I would hope that the qualifications, experience and methods of their researchers would be reported in detail and examined as closely as the panel of specialists who carried out the above review. If you have not already done so, I would ask that you pay a visit to the Demonstration Forest in the Seymour watershed, which is open seven days a week. This project is a classic example of how forests and watersheds should be managed. [Ray H. Marsh, Marsh Logging Ltd.]



GVWD log sort yard and booming facility, next to the mouth of the Seymour River.

#19. On page two of this report (Draft Summary Report, January 1991) the authors state that “the study was conducted by an independent panel of technical experts.” Nothing could be further from the truth! This panel includes Dr. D. Golding, whose research in the watershed is used by the GVWD to justify its practice of timber harvesting. For this panel to come out in public and criticize the GVWD’s timber harvesting program would be to question Dr. Golding’s research. This is a conflict of interest. Another example of a conflict of interest lies with the chairman of this panel - Mr. Gregory Kirmeyer and his company Economic and Engineering Services, Inc. This is the same company who produced an earlier report for the GVWD called Drinking Water Quality Improvement Program - Final Summary Report, September 1990.... If Mr. Kirmeyer’s Watershed Report - January, 1991, had concluded that increased turbidity is related to timber harvesting the GVWD’s current management program would be in serious jeopardy. [Dr. Ronald Abrahams, Director, Western Canada Wilderness Committee]



Aerial photo of cutblocks in upper Eastcap Creek, winter 1993.

20. A moratorium on the proactive watershed program is quite undesirable and would likely be detrimental in the long run, to water quality. There are good technical reasons to believe that the recent “dirty water” event was unrelated to logging. Prior to building the dams, and prior to logging, similar high turbidity levels in response to normal winter rains, were common. The dams now act as settling basins so that high turbidity only occurs during extremely heavy rainfalls. [Dr. J.E. Barker, Register Professional Forester]

#23. Although my comments may appear to be specific to the report, they are rendered in the context of my association with the forest industry and the importance of watershed management, of which I consider forest harvesting an integral part, in community watersheds throughout the province of B.C. According to the 1980 Ministry of Environment report “Guidelines for Watershed Management of Crown Lands Used as Community Watersheds”, domestic water supply watersheds occupy a

substantial land area.... The ESSI report appropriately identifies a water quality risk associated with roads. However, it would appear from the documentation and my experience, the benefits to water quality far outweigh the risks. As well as an indicated program for minimizing the risks to water quality through road construction and maintenance practices, the expected increasing water quality benefits from a road system are well documented. The benefit of a road access program which provides for the rapid attack on wild fires and the ability to access and remediate naturally occurring sources of sediment increases the opportunity to reduce potential sedimentation to a far greater degree than might be the case without a road access system. The requirement of an Integrated Resource Management Plan (IRMP) would provide an improved opportunity to formulate a Total Chance Harvest Plan.... With a Time and Space IRMP, a long term sustainable yield can be determined which accommodates not only the working forest land base but also site specific variations in the required rotation ages. A long term sustained yield and its associated economic goals provide an opportunity for strategic economic planning of activities required to minimize the effects of natural events on water quality. This puts erosion control into a pro-active, rather than re-active mode. [Robert P. Willington, Ph.D., Registered Professional Forester and forest hydrologist, Manager, Integrated Resource Analysis Section, Fletcher Challenge Canada Limited.]



Looking up
Cedar Creek
tributary valley,
Coquitlam
watershed.

#24. I understand ... that the GVRD considers road-building and logging will improve water quality over the long term by reducing fire risk. However, the Review appeared to lack data supporting this view. Maybe I missed something in the Review, but I saw no research data indicating that logging reduces the risk of degraded water quality. Logging should be considered only if there is strong evidence that logging and road-building will improve water quality. Although insects and disease may increase fire risk, I think it is debatable whether logging significantly reduces fire risk. Many forest fires are caused in logging operations. Also, unburned logging slash is a fire hazard. Supporting the data is required to back up the premise that logging significantly reduces fire risk in coastal rainforests. However, even if this can be shown, supporting data would still be required to back up the assertion that the magnitude of fires that can be expected in these old growth forests would lead to degraded water quality. I understand that lower elevation old growth forests are just about gone in southwest B.C. outside of the GVRD watersheds. I believe it is important for heritage and ecological reasons to protect the last of these forest ecosystems. The GVRD has an opportunity to protect this rare resource which is of increasing non-monetary value. [Trevor Jones, Professional Engineer.]

#25. While making no claim to be an expert, despite a forestry career spanning a period of 36 years, I do strongly urge you to implement the recommendations compiled by the panel of technical experts. I see no reason for questioning their credibility and am prepared to accept them as “expert witnesses.” It is appreciated that GVWD harvesting activities are currently subject to intense criticism from some quarters. While only speculation on my part, one could suggest that to demonstrate, as I am sure it can be, clearcut logging is compatible with potable water production would not serve the purposes of those who insist that clearcutting is unacceptable under any circumstances. Maintaining inaccessible watersheds would be unduly risky with respect to fire suppression, the salvage of mortality associated with fires, insects or disease and the interception of trespassers. As a consequence roads must be essential. Admittedly some studies have disclosed that as much as 90% of sedimentation and siltation associated with logging is caused by poorly constructed and maintained harvesting roads. But in this instance the roads constructed by the GVWD are to be permanent. Further, if my memory has not failed me, it has been established that water production is enhanced by prudent manipulation of the forest cover.... One is often surprised that those who emphasize the complexities of natural ecosystems do not hesitate to invoke over-simplification when it serves their purpose. I too believe that future supplies of good quality water will depend on a healthy, stable, multi-aged forest with a vegetative ground cover and not on the creation of a “cellulose cemetery”. [R.K. Vivian]



#26. The consultants who make up the firm of Stewart & Ewing Associates Ltd. (SEAFOR) represent a group of widely experienced and well qualified Professional Foresters. Individuals of the group have pursued impressive careers in government service, in international development and in the forest industry. The (GVWD) is an example of a forest area dedicated primarily to the production of a product other than timber, namely drinking water. The (GVWD), charged with responsibility for the management of the Watershed, has clearly established this priority objective of management. The GVWD has also determined that the maintenance of the vigour of the forest cover and the protection of the forest from accidental fires are necessary for the optimum fulfillment of its primary role in

producing drinking water. ... the GVWD has retained an impeccably qualified panel to review the performance of its mandate and to submit recommendations for the improvement of this performance. We believe that adopting the alternative of a “hands-off” approach would jeopardize the health and the water production ability of this mature and overmature forest. We are also very concerned that a “hands-off” approach would seriously impede the ability of the manager to control forest fires and other disasters. Since the need, and the practice, of systematic forest management and protection have already been established in the Watershed, the sudden change to a “hands-off” approach at this time would, in our professional opinion, represent a dereliction on the part of the manager. [M. Stewart, Registered Professional Forester, SEAFOR, Stewart & Ewing Associates Ltd. (Registered Professional Forester Associates, S.J. Angus, W.G. Burch, W.D. Ewing, S.M. Forrest, R.M. Herring, J.C. Howe, S. Techy, D.E. Whidden)]



#27. ... development of a road system will ensure access for control of wildfires, should they occur, ensuring that our watershed won't burn up as did Yellowstone following a few years of “hands-off” approach which increased the risk of a catastrophic event. Let's not step backwards into the dark ages. A moratorium would be that step. Also I'd like to point out that the Seymour Demonstration Forest has proven to be a tremendous attraction for people, both local and tourist, and especially as an educational tool to “demonstrate” forest management practices that provide the results to see over time - priceless information when you consider the thousands of young school children and their teachers who can see for themselves what forest management is all about. ... doesn't the revenue from log sales help to support the cost of operating the water system? Isn't it true that the cost of water will go up without enhanced, intensive forest management and the revenue therefrom? [R.W. Fechtner]

#71. International Forest Products Limited.... as a company which depends on the forest for its existence and as foresters and residents of the Lower Mainland, we are dismayed at the apparent level of hysteria and knee jerk reaction in regard to water quality and logging in the GVWD area. We are particularly concerned that much of the controversy is being generated by the WCWC - a group well known for their ability to create conflicts, crisis and controversy and not known for dealing in consensus and cooperation. The WCWC say the harvesting practices carried out in the watersheds of the GVWD causes slides and water turbidity. They say insect infested trees should not be removed. They say that fire and insect outbreaks are of such rare occurrence that they don't require management strategies. They say the consulting team is not independent, rather it is tightly connected to the GVWD therefore the report is not valid. They say the GVWD has been deliberately misleading council members on the activities in the watersheds. The logging operations in the watershed are a model for the Industry. The GVRD should be proud of the accomplishments of their employees. [R.W. Fechtner, vice president, Forestry and Logging, International Forest Products Limited]

#44. Canadian Women in Timber was formed two years ago in response to the need for a "moderate" voice in the often polarized debate about the future of our forests. We need to have accurate information available for the public to help them make educated decisions about our forests and the forest industry.... Our members run the gamut from professional foresters to housewives.... One of the educational projects our group has been involved with is the Seymour Demonstration Forest. As one of its volunteer guides, it's been a tremendous opportunity for me to learn about forestry and watershed management. I am aware that studies have been done that show that good water quality depends on diverse, multi-aged and healthy forests which are more resistant to insects, disease and fire. Old and decadent trees have been removed to decrease the possibility of major fire damage which would seriously affect our water supply. Funds from logging activities... Curtailing the educational programs would have a serious impact on our school programs as well as crippling the public's increasing understanding of forest land uses. A moratorium on logging and road building will... increase the costs of operating our water supply as it eliminates the funding generated by the harvesting of timber. A moratorium would also increase the cost to taxpayers for fire and pest control that can damage our water supply area, which would in turn have a negative effect on our water supply in both its volume and quality. [Pat Fechtner, Canadian Women in Timber]

#58. My husband and I help (as volunteers) with some of the summer tours for the public and can certainly attest to their popularity as a "fun" learning experience. A moratorium on logging and road building will cripple the educational value of observing forest management practices that provide results to see over time - priceless information for the school children and their teachers who tour the demonstration forest to observe for themselves. [Pat Fechtner.]

#28. This letter is to appeal to you not to support a motion to ban logging in our watersheds until the review process is completed. At that point, I am confident that the facts will clearly show that in no way does logging and road building cause deterioration of the quality of our water. Rather a "hands-off" approach would expose these areas to more dangers such as wildfires, insect infestations and landslides. Regarding a moratorium that decision would only reflect a "knee-jerk" type of reaction to the "foaming at the mouth" preservationist groups such as the Western Canada Wilderness Committee (WCWC) whose main goal is to stop all logging in this Province. [Lynda Jobes.]

#29. Whether the tree cover of the watersheds is virgin, old growth or has archaeological significance should be of lower concern. It is the health of the forest and its ability to maintain good water quality that is of paramount importance. I view the proactive approach to forest management as a type of insurance policy.... I also feel it is important that we bequeath a healthy forest to succeeding generations. It is unfair for us to leave them a forest tinderbox just waiting for disaster to occur. [J.M. Stephen]

#30. I am also aware of the intensive campaign being conducted by certain so-called “environmentalists” who would like to stop all activities in the watershed and “let nature take its course.” I am convinced that if the GVRD had adopted a “hands off” approach our watershed would have been ravaged by insects, fire, and we would now be drinking “turbid water” every year rather than just during those rare years when we experience record fall rains. [D.E. Rickson]

#31. I am impressed by the detail and professional nature of this report. It clearly vindicates the unwarranted attacks on GVRD staff by the WCWC and others over the quality of their management activities, especially clearcut logging. I sincerely hope the politicians responsible for ensuring that these tremendous timber and watershed resources read and heed the specialists who prepared the report. [W.E. Dumont, Registered Professional Forester, Port McNeill]

#32. I was shocked when watershed logging began in the mid sixties. There should be NO

commercial/industrial/public activities of any sort in the watershed. Whether or not logging for the purpose of improving water quality is practical or justifiable needs public debate. I would like to see vigorous discussion in which all claims, charges and statements made by each side are answered in full by the other side. A referendum may then be in order. Daily water quality data (pH, turbidity) could be published along with the daily air quality information in the Province. I would be particularly interested in weekly summaries of the high and low values of every quality measurement made by the GVRD. Let's let everyone know what we are dealing with. [Douglas Porter.]



#33. ... the mud slide in the Jamieson Creek drainage of the Seymour watershed exemplified that logging and road building puts quality of the drinking water of B.C.'s most densely populated area at risk. That the logging of this area was part of a research project by Prof. D. Golding, a member of the technical watershed review panel, to exhibit that logging, road building, and slides are not related makes the recommendations of the report to continue and increase these activities even more questionable. [Pauline Mushens, president, Beaver Canoe Club]



Aerial view of a cutblock, laden with snow, in Eastcap drainage, Capilano watershed.

#34. WHEREAS the drinking water provided by the Greater Vancouver Water district to users within the (GVRD) fails on a significant number of days each year to meet those standards, both with respect to turbidity levels and coliform counts; WHEREAS there is a continuing unresolved debate about the effects of the forest management practices within the (GVWD) watersheds on water quality; BE IT RESOLVED: ... That a fully-funded independent study of all industrial practices in the three watersheds, and the forest management practices of the GVWD in particular, be conducted to determine whether and to what extent these practices are affecting drinking water quality within the GVWD, such study to be reviewed by a scientific and public review committee; and That the BCMA is opposed to logging in watersheds until the fully-funded independent study of all industrial practices in the watersheds in the (GVWD) is completed; and That regardless of the outcome of the aforementioned independent study, the GVWD be required to scientifically and economically justify continued logging in the watersheds. If such logging cannot be justified, then it should cease. [Ian. D. Gummeson, M.D., chair, Environmental Health Committee, B.C. Medical Association]

#36. In my view, based on a review of the material available from both the panel of independent consultants and the special interest groups, discontinuing the harvesting program would in fact be detrimental. Natural processes in our environment such as insect or disease outbreaks, fires or storm events of the magnitude experienced in November, 1990 cannot be controlled. Proactive management techniques... can manipulate these same processes to a certain degree to minimize their negative impacts on water quality. Given the terrain of the watershed areas, it is evident that natural landslides would occur regardless of the Watershed Management Program, especially during severe storm events. Under a proactive management program in place there is a mechanism to anticipate the consequences of these natural landslides and institute preventative measures to protect or enhance water quality. The presence of overmature timber and timber dead or dying from insect disease infestations present an extreme fire hazard. As to water quality, I believe that the program currently in place, combined with the recommendations of the Independent panel of consultants hired by the GVRD, will maintain the quality of our water system for the residents of the lower mainland. Stopping the Watershed Management Program will not lessen the impact of these landslides or reduce the murkiness in our water. However, as noted by the Panel of consultants, a halt to the program will “allow for the eventual decline of forest health, increasing the risk of a catastrophic event eventually leading to the degradation of water quality.” In conclusion the Water Committee should look at the facts thoroughly. The facts strongly support the continuation of watershed management, including timber harvesting, in the GVWD watersheds. [R.A. Shebbeare, Registered Professional Forester]



850 year old Douglas Fir, logged from the Capilano watershed (stamp mark WS-1).

#37. The Association of B.C. Professional Foresters (ABCPF) is the registering and licensing body for 2,700 Association members in the province, including 600 living in the Greater Vancouver Regional District. Part of our mandate is to present our views on forestry related matters deemed to be in the public interest. This delegation is from the Vancouver Regional Public Affairs Committee of the Association. The ABCPF of forest management and watersheds is as follows:

Forest management must recognize the importance of the water resource. Maintenance of water quality and quantity are management objectives. Appropriate forest management in watersheds will maintain the vigorous forest vegetation growth necessary to protect water quality and quantity. Decisions made by our elected representatives regarding the future of watershed management should generally be based on a combination of informed public opinion, and sound scientific findings. This discussion focuses on the scientific research conducted in the watershed and on the findings of the GVWD review Panel. The 20 years of research conducted to date in the watershed, including the latest review, would appear to show conclusively that whatever problems are present are manageable and the risks associated with those activities are low. The benefits of the current management program based on the recommendations of the review Panel would appear to be substantial. Research in the Vancouver watershed indicates that the present method of harvesting “does not appear to create a water quality problem. Last November’s rainfall was 230% above the normal monthly rainfall.... The vast body of scientific literature on this subject suggests that erosion will naturally follow whether the area has been logged or not. [Rob Kyle, Vancouver Regional Public Affairs Committee, Association of B.C. Professional Foresters]



#38. Our members believe that logging practices currently practiced in the watersheds are among the best in the province. This makes an excellent example of a properly managed forest which requires proactive strategies designed to increase the forest’s stability and thus the forest’s resistance to insects, disease, fire, and erosion. This Council also feels that the loggers, their families, and communities that depend on their income should not be forgotten. Their loss of livelihood should no be based on misinformation or the political lobbying by preservationist groups. Decisions should be based on sound scientific research and on the implications to workers and their families, and also to public opinion by practicing sound resource management. [Joe Leclair, president, New Westminster and District Labour Council]

#39. Contrary to the opinions expressed by some uninformed special interest groups, the Watershed management department is comprised of experienced, high caliber technologists and Registered Professional Foresters committed to environmentally sound practices and improving the watershed lands. The Union understands that the watershed management program is an excellent one and any decisions made must be based on facts and not on emotions. The independent report commissioned by the GVRD supports the program. Based on facts, it addresses the issues of excessive rainfall, high turbidity, fire, pests, and other factors which may influence the quality of water. [Earl Everett, president, GVRD Employees Union]

#40. I am a Richmond resident, a long term water user, a professional forester and I most vigorously support logging and forest management in our watersheds. I am aware that some, particularly (WCWC) are attempting to halt this logging, and I do not believe there is any technical or ecological reason to do so. ... were logging halted even for political or emotional reasons, pressure would soon mount to stop all watershed logging. This would have extremely serious economic repercussions, with no sound ecological merit. [R.W. Beaumont, Registered Professional Forester]



Old hand-loggers stump, logging operations early 1925, Seymour off-catchment lands.

#41. We wholeheartedly trust and support the GVRD forestry department and the people who presently manage forests in our local watersheds. Discussion on watershed management needs to take place based on dependable technical information, not on emotional grounds. We are concerned that the public perception has become focused on forestry as the culprit in land instability during a period in which record precipitation has affected local water supplies. In fact, we are given to understand that of the numerous landslides studied in the watersheds only one was even remotely connected to logging. Another major concern is the fate of the Seymour Demonstration Forest in North Vancouver

where several of our members serve as tour guides. This unique facility, including its active working forest, provides an invaluable educational, recreational, natural and economic area for the region. It is enjoyed by thousands of visitors each year. Its loss or curtailment would be a real tragedy. [Martha L. Barker, Public Relations Committee, Canadian Women in Timber, Lower Mainland Branch]

Ralph Kelman and Pacific Yew, Capilano watershed.

#42. The temperate rainforests of coastal British Columbia have existed for thousands of years. These ancient forests, which are characterized by the presence of large living trees, a multi-layered canopy, large standing snags and downed trees, are a complex ecosystem in which a single fallen log can provide habitat for over a thousand invertebrate species (Kelly and Braasch, 1988). Old growth forests, which contain a greater biomass than tropical rain forests, play an important role in the stability of the local climate (Caufield, 1990). It has been estimated that up to 20% of forest rainfall comes from drips of moisture collected from the mists by condensation on the needles of trees. The stems of these ancient trees can hold up to two thousand gallons of water (Kelly and Braasch, 1988). Downed logs, in addition to providing nutrients for the next generation of trees can also hold extraordinary amounts of water. Within the last one hundred years, these old growth coastal forests have been subject to extensive harvesting and, now, their existence and the fresh water from which it flows from then is threatened by the continuing logging activities of man. We concur with the Panel that the Amending Indenture should be altered from one based on the concept of a tree farm license to one



based on a watershed license. The academic members of the present Review Panel have been drawn entirely from the UBC Faculty of Forestry. In order to have a broader perspective, members of the review panel should include representatives from other forestry schools such as those in Washington and Oregon, i.e., from institutions which have been instrumental in developing our present day understanding of old growth forests. Upon a thorough examination of this report, we have found that much of the data is lacking in sufficient detail to justify the conclusions drawn by the Panel. Moreover, we feel that some of the data has been presented in a misleading manner. Our initial objective in reading this report was to examine the data regarding the relationship between logging/road building activities in the watersheds and the presence of turbidity in the water supply. Although the GVWD Panel has interpreted these data as showing that there is no correlation between logging/road building activities and turbidity, it is our view that the data presented are inadequate to support their conclusion. In other words, harvesting has affected double the amount of land that insect

infestation has and approximately 14 times the amount damaged by fire. We also question how much of the initial insect damage occurred in forests which were unhealthy as a consequence of previous



Ralph Kelman and his telescope. Overlooking Crown Mountain from Hollyburn Ridge.

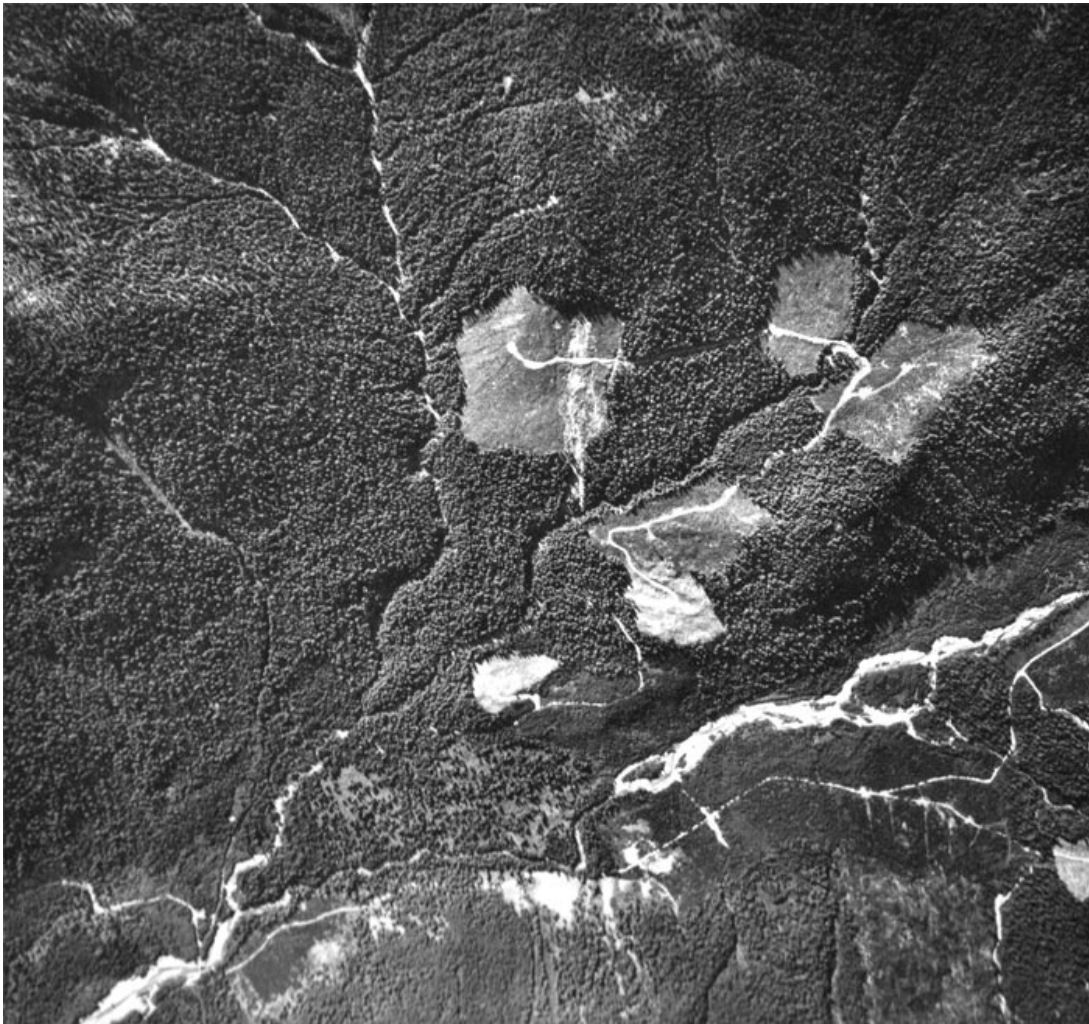
logging activities in the early part of the century. Old growth forests are rarely susceptible to large scale damage from insect infestations (Robinson, 1988). Other reports indicate that the virgin forests of the west coast represent the lowest fire hazard when compared to other ages of forest stands such as seedlings or second growth (Robinson, 1988). It is, however, abundantly clear that little or no value has been placed by the Review Panel on the retention of old growth forests in the watersheds. As is true with many of the diseases of the forest, it is now realized that root rot is a problem caused mainly through clear cutting practices, i.e., root rot is not generally a problem in healthy old growth forests (Robinson, 1988.). The presence of snags is an essential feature of old growth forests. Such trees, although dead, are really wildlife trees which provide nesting habitat for a variety of insect-eating birds.... The removal of snags destroys wildlife habitat which, in turn, can promote insect infestations due to the loss of natural insect predators. It is our opinion that insufficient weight has been given to the preservation of the old growth forests of the watershed. We believe that, since old growth forests make significant contributions to the

hydrologic characteristics of the watersheds, one of the major policies of watershed management should be the preservation of these forests. Activities which compromise the health of the old growth forests should be prohibited. Since it appears that, for fire fighting purposes, access to all parts of the watershed can be made by helicopter, the main purpose of road building seems to be for logging. [Elaine Golds, The Burke Mountain Naturalists]

#43. In general, the draft report appears to try to justify the logging and roadbuilding activities carried out over the last thirty years. Such a large proportion of the information presented is either erroneous, irrelevant, biased or slanted toward forest production/exploitation that one must doubt any meaningful conclusion on present and future water quality can be based on it. I would urge the Water Committee to seriously consider the following recommendations: 7. That a new organization be formed to implement superior "Watershed Management" with a WATER SOURCE QUALITY CONTROL

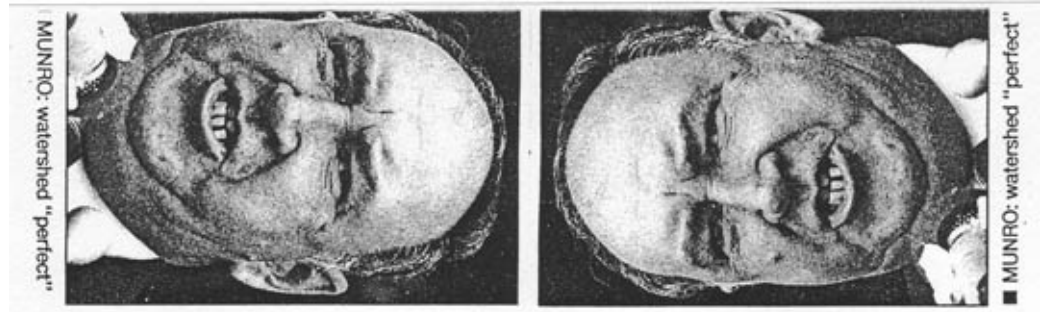
MANAGER a senior position to oversee the many research studies and other endeavours required to ensure improved water quality for the near and long term future (without phony justification for continued logging!) and with clout to control all extraneous activities in the watershed. [Martin Kafer]

#45. The quality of drinking water to Lower Mainland residents is sacred. Because of the serious nature of this subject matter, it is one that can be easily exploited by anyone who is clever enough to think up sensational headlines or make wild unsubstantiated statements. There have been suggestions made that the quality of drinking water is going downhill and that logging and road building are the culprits. The turbidity charts... show quite clearly that these accusations are not valid. As a matter of fact, the charts show that turbidity levels have been decreasing over the years. If further proof is needed to show that logging and road building do not have a negative impact on the quality of drinking water, we would like to point out the study done by Dr. Douglas Golding... Comparison of water quality before the logging period, during the logging period and for a five year period after logging had been completed, showed that logging had no impact on water quality. Without a doubt, IWA-Canada has had a long and proven history of being an environmentally conscious Union. The IWA believes strongly that forestry practices must “meet the needs of the present without compromising the ability of future generations to meet their own needs.” We are convinced that the attempt to create a



Aerial photograph of Doug Golding's Jamieson-Elbow forest hydrology experiment in the Seymour watershed. The large, steeply sloped, cutblock (2-92) in the upper middle is 25 hectares in area, the location of a large landslide in November 1990, that shut down the Seymour reservoir for 3 weeks.

patchwork mosaic of multi-aged, diverse specie stands is most effective in preventing large scale infestation and disease outbreak, as well as intense fires. The road systems



allow access to quell lightning strikes and prevent large scale fires. It seems to us that a proactive approach to watershed management was adopted as a result of the failure a reactive approach to adequately protect water quality. Those who advocate a "hands off" approach to watershed management either have not learned from history or are willing to allow Lower Mainland residents to be guinea pigs while experimenting with "new forestry techniques." New forestry philosophy stresses that a watershed, left untouched, will produce the highest quality drinking water. This school of thought advocates leaving down and dead trees to decay naturally because of the role they play in providing habitat for small animals and other wildlife species. What is not considered is the creation of a forest that is highly susceptible to fire. "Much of what is touted by the "New Foresters" is experimental in nature, amounting to unproven, untested theories and hypotheses. The IWA suggests very strongly that if there is justification for experimentation and testing of new forestry techniques, this testing should not be done in a major metropolitan watershed that provides drinking water for 1,400,000 residents. The risks are frankly too high. [Gary Kobayashi, president, IWA local 1- 217.]



#13. I am confident that discontinuing the harvesting program would in fact be detrimental to water quality. As has been stated many times the presence of overmature timber and timber dead or dying from insect or disease infestations presents an extreme fire hazard. Natural processes such as landslides will continue to occur in our watersheds during these intense rain storms as they did in unlogged watersheds in other coastal locations. A complete halt to the Watershed Management Program will not lessen the impact of these landslides or reduce the murkiness in our water. However, as noted by the Panel of consultants, a halt to the program will “allow for the eventual decline of forest health, increasing the risk of a catastrophic event eventually leading to degradation of water quality”.... I urge the Water Committee to accept the report as prepared by independent, professional consultants. [B.W. McCloy, Registered Professional Forester]

#46. COFI supports the undertakings of the consulting team and has reviewed with interest the conclusions and recommendations in their report. The philosophy of the GVWD program, as we understand from the consultants’ report, is to develop a healthy diverse forest cover that is stable and resistant to natural decline from insects, disease, fire, and erosion. The approach is to harvest timber at a sustained rate with the goal of developing a vigorous multi-aged forest containing a mosaic of even-aged stands with a diversity of species mix. Road construction not only permits access to areas for harvesting, but also permits access for immediate fire control, removal of insect and disease infected trees, monitoring of water quality, maintenance of water supply facilities, conducting research activities and sediment and erosion control programs. All of these programs work together to provide the residents of the Lower Mainland high quality drinking water. The expertise of the numerous consultants associated with the development of the plan cannot be overlooked and their independent review of the Watershed Management Program should be accepted. In fact, we are confident that a hands-off approach in the watersheds, that allows nature to proceed without human intervention, would allow for the eventual decline of forest health, increasing the risk of a catastrophic event leading to degradation of water quality. The presence of overmature timber and timber dead or dying from insect or disease infestations presents an extreme fire hazard. Without the existing logging road system it is likely that significant fire damage would have occurred in the watersheds. The small patch clearcut harvesting system currently employed by the GVWD fulfils the mandate of providing high quality drinking water to the residents of the Lower Mainland. Decadent, over-mature trees are removed in cutblocks... Those who link the high turbidity of the Region’s water last November to harvesting in the watersheds are wrong. Given the terrain and weather conditions of the watershed areas, it is evident that landslides would occur regardless of the Watershed Management Program. With a proactive management program in place, there is a mechanism to anticipate the consequences of natural landslides and institute preventative measures to protect or enhance water quality. The extensive road network provides access to rehabilitate these natural debris torrents to limit further erosion and associated turbidity. **There are over 80 community watersheds in B.C. that are also an important source of timber to the forest industry. Many jobs in those 80 communities will be affected by the GVRD decision.** The forest industry is obviously concerned about the implications of the upcoming decision and it is for this reason that we have so thoroughly reviewed the contents of the consultants’ report. The GVWD watersheds, like all watersheds in the province, must be considered within the context of an overall Land Use Strategy. Although water quality considerations must remain the primary mandate of the community watersheds, we cannot afford single-use designations, especially when, in the case of the GVWD watersheds, all information points to the need for integrated use of the forested land. [B.W. McCloy, Manager, Environment and Forest Management, Council of Forest Industries, #46]

#48. When one considers the life span of this forest and its protection from disastrous situations which are bound to occur in the future and under unpredictable circumstances, these fires could wipe out the entire Capilano Forest. The only sensible protection against such disaster is a provision of a comprehensive road network through which equipment could be moved to deal with forest fires before they became overwhelming.



During the late 1940's and early 1950's... insects

Former Seymour Demonstration Forest signage showing “forestry” history.

attacked remote forest areas on the West Coast of Vancouver Island.... If these areas had had proper road access at that time, the logger's axe and the felling of these trees would have stopped the insect attack without difficulty.... The same thing applies to the Capilano.... one can imagine the public uproar that would arise in the Greater Vancouver area if it was found that due to lack of foresight, insect spray had to be used to stop a hoard of squishy caterpillars from damaging the forest from which we get our drinking water. ... it is the responsibility of management to create a new forest which will gradually take over from the old forest as time goes on.... it must be done in order to protect a large proportion of the forest from going into rapid decline due to old age. [George Smith, former employee with the Capilano Timber Co.]

#51. The report is positive and unanimous from a Panel of 11 independent consultants, technically expert in watershed management matters. I find it incomprehensible that this unanimous expert advice could be perceived as being wrong or technically incorrect. When one really looks at the issue of harvesting in watersheds and realizes that this management program has been reviewed by persons that are the leaders in their field and are very reputable within B.C. and probably in Western Canada and the United States, then, I as a concerned citizen, feel very comfortable in recommending that harvesting continue in the watersheds. [Trevor Boniface.]

#54. The ... Review published earlier this year was done by a panel of reputable experts familiar with B.C.'s climate and growing conditions. They found that the present forest programs in the GVRD were well managed and presented no hazard to our water supply. A moratorium on logging in the watershed will only serve to disrupt the 5, 10, and 20 year plans for sustained yield, upset the delicate healthy balance of multi-use that presently exists, increase the fire hazard and presence of disease, which in turn will decrease the water quality and make management of fish and wildlife resources difficult. The Demonstration Forest is a well planned and maintained example of a multi-use forest. [Valerie Leasing.]

#55. Several years ago I lived just outside the Capilano Watershed. On several occasions, I saw loaded logging trucks leave the watershed. I assumed that these must be from some necessary maintenance of the area. I certainly did not think that commercial logging was occurring in such a sensitive area. If hikers such as myself are banned from in the watershed, it is ludicrous that clearcutting (or any other kind of logging) is allowed in there. [David Way, BSc.]

#57. I wish to comment... from the perspective of a forester whose primary teaching and research activities are in the fields of effects of forestry practices on streamwater quality and forest fire science and management. I have also conducted several research projects within Vancouver's water-supply watersheds, and am familiar with all three watersheds and forestry practices within them. I believe that the primary management objective for the watersheds should be to produce an adequate water quantity of as high a quality as possible, for domestic and industrial purposes. All management activities within the watersheds should be compatible with this objective. I believe that neither the rationale for timber harvesting nor the assertion that timber harvesting does not adversely affect water quality, can be supported scientifically. No data are presented for destruction of forests by disease in the watersheds. Studies of old-growth forests in coastal Oregon and Washington, similar to the forests within our watersheds, indicate that such forests are not declining rapidly or drastically. An occasional outbreak of an insect species has affected a relatively small area of forest but, as with disease, insects have not been shown to have any major widespread impact on old-growth forests similar to those in our watersheds. There are many other insects in our forests, of course, and some can be promoted by timber harvesting activities. Thus bark beetle populations can be enhanced by logging slash. Injurious logging practices which scar or break roots of residual trees, predispose these trees to damage from insects such as bark beetles, ambrosia beetles, and root-eating weevils. Sometimes the opening of a forest by clearcutting may subject trees to desiccation and heating of soil, with subsequent root injury and susceptibility to bark-mining insects (e.g. Graham and Knight 1965). On balance, the undisturbed old-growth forests of our watersheds are not particularly susceptible to insect or disease attack as evidenced by the fact that we never find extensive areas of such forests completely killed by insects or disease.

With regard to our watersheds, I believe that a good forest fire prevention, detection, and suppression system should be present but the threat from fire to the watersheds is not as great as the report suggests. Furthermore, the approach to fire management described in the report is unlikely to be optimal or even desirable. Extensive fires in old-growth coastal B.C. forests similar to those of the study area are very infrequent. The finding that old-growth forests present a higher fire risk than managed forests is most unusual and is not supported by available data or current fire behaviour models.... the risk of fire depends on the number of people in an area. In the absence of people "managing" a forest through timber harvesting, etc., the only risk of fire comes from lightning. Thus, data from the watersheds indicate that, during the period 1953-1990 almost half (48%) of the fires that occurred were caused by people. Furthermore, during the period 1900-1990, most of the area burned was due to people-caused fires. Remove the people and reduce the risk. The report presents 4 alternatives, of which the review panel prefers alternative 3. From the above discussion, I favour something between alternative 2 and 3 with only a very low level of timber harvesting and vegetation and fire management strategies which allow natural processes a greater role than at present. [Michael C. Feller, Faculty of Forestry, UBC, #57]



Ancient cedars in the Capilano Valley before logging began (1910s). Capilano Timber Co. photo collection.

#59. They (WCWC) also call for an Independent public inquiry as well. It seems that your Watershed Management Evaluation and Policy Review is independent and you are holding public meetings on May 2nd and 3rd. The WCWC call for “selection logging only if it is proven that it will not diminish water quality” is another ploy to halt logging altogether. How are you going to prove it will not diminish water quality? [S.W. Lorimer]

#62. This report would appear to be well organized, information is properly presented, and the subject is discussed comprehensively. The goals regarding long term management of the watersheds are well formed, and parallel the Ministry of Forests integrated resource management policies and direction. ... I suggest that the recommendations contained in this report are appropriate, reasonable, and should be implemented. [J.R. Cuthbert, Chief Forester, Ministry of Forests]



#63. The current management practices, which include a harvesting program have been heavily criticized by the WCWC. I believe that they are presenting a very narrow minded view and are promoting their own cause of a complete province-wide ban on old growth logging. The review panel consisted of experts in the fields of forestry, hydrology, soils and wildlife. Although the study was commissioned by the GVWD, it is my opinion that the individual members have presented an unbiased and impartial assessment and have come up with workable conclusions. The benefits of the current program are: 1. By creating a diverse age class structure the watershed is less susceptible to insect infestation; 2. Removing the older decadent trees reduces the fire hazard; 3. The harvesting program results in a permanent road network which aids in providing expedient fire control actions; 4. Produces consistent water yields; 5. The pro-active approach reduces the risk of catastrophic events (large uncontrollable fires) which would have a devastating effect on water quality. With a population the size of the GVWD area depending on its water supply, the risk is too great to leave the watershed unmanaged. We need to manage the risk, by a pro-active management program. [W.J. Rosenberg, Registered Professional Forester]

Sept 23/93 F&C Watershed protection top priority, says Gillespie

The province can no longer afford to ignore the protection of local watersheds, Saanich Coun. Bob Gillespie told members of the Union of B.C. Municipalities on Wednesday.

Gillespie is hoping to persuade delegates to support a resolution calling on the province to recognize watersheds as a land use in the Forest Act, Water Act and the Municipal Act so municipalities have adequate tools to protect drinking water.



Gillespie: cites growth

UBCM delegates have been passing similar resolutions for the past decade, including last year.

The province has said it is preparing a discussion

paper on water policy.

But Gillespie said time is short, especially with growth pressures on Vancouver Island communities.

"Resolutions like this have been on the books for 10 years," Gillespie said.

"We're talking about growth management... If you haven't got water what can you do?"

Victoria and Vancouver are the only two areas in the province that have protected watersheds, he said.

Forestry practices, mining, agriculture practices and urban development are threatening watersheds throughout the province.

"Today there is really no control within the community.

"So if a community wants to expand and has to expand because of population growth, they would have to make a deal with either MacMillan Bloedel or some multinational. That's pretty sad when you're talking about the water to a community."

Gillespie said he became concerned about the issue after spending three years as a director of the Greater Victoria Water District.

"I want every council in British Columbia to debate the issue and then send in a resolution to the provincial government and to the leader of the Liberal Party and the third party immediately," he said.

#64. Due to the recent concerns of the quality of water which is obtained from the Capilano Watershed, we understand that a full filtration system is now being considered. If this is the case then a route from Squamish to Vancouver through the Capilano valley would have little or no impact. The Capilano route and the filtration system would satisfy the needs of everyone and could very well be less expensive than any other alternative route suggested. [Wendy Magee, Prepared for the Honourable Rita Johnstone, By the Squamish and Howe Sound Chamber of Commerce]

#65. On Vancouver Island, most of the communities have been logging their watersheds for many years. Port Alberni and Victoria have been logging their respective watersheds for well over forty years. Water quality has not suffered.... We have learned through experience that if communities are going to have a continued supply of fresh, clean water from their watersheds, certain steps must be taken to prevent the following problems.

1. Forest insects and diseases indirectly affect water quality by reducing stand health and vigour, thus increasing the risk of fire. 2. Forest fires can have both direct and indirect impacts on water quality - directly contributing ash and causing adverse taste and odour, and indirectly by increasing erosion potential and nutrient release. In closing I would like to add a few facts and figures to try and clear up some of the in-accurate statements that have been spread around by a variety of groups who's aim I believe is to stop logging in B.C. not protest water quality of your watersheds. It was the rain not logging that contributed to the cloudy drinking water in November of 1990. I would ask you to base your opinions on reports from experts rather from the WCWC... I believe it is time to start trusting our experts who have many years of knowledge in their particular fields of experience. [J.W. Bassingthwaite, chairman, Share B.C.]

#67. Although we in the interior of B.C. are not directly affected by the current examination of the Watershed Management Program... we may be indirectly affected by the decision reached. Having seen what we believe is a well orchestrated campaign by the WCWC to unfairly discredit controlled logging actively within the watershed, we are concerned that a decision by the GVRD to discontinue current forestry activity in the watershed would have implications for watersheds throughout the province. Should anyone in the GVRD dismiss our request to have our viewpoint considered - based on the fact that we live outside of the greater Vancouver area - we would like them to be aware of this concern that the effects of their decision may be felt beyond the boundaries of the Greater Vancouver area. Given that most of B.C. falls into 5 major watersheds, and as small communities throughout the province continue to take root and expand, we must resist "single use" solutions and continually look for better ways to achieve water, forestry and other important values from the same land base.... we must not lose sight of the fact that there are many reasons why water quality can be negatively affected.... The reality is that it is the "ambition" of every mountain to slide into the sea and we must realize that natural

processes are involved here.” [D.M. Fraser, Manager, Communications, Interior Lumber Manufacturers’ Association, #67]

#70. “I now read of massive mudslides causing the muddy water we had this winter. But not just mudslides, mudslides that started on clearcut or excavated hillsides. I would like to know what’s going on here? Is the GVRD still claiming there’s no negative connection between logging and water quality? What is your evidence? You have an extremely valuable resource to look after for all of us who live in Vancouver, I’d like to know that your first concern with watersheds is water quality, not convenience or turning a quick profit on some timber. I’d also like to hear an explanation of the changing rate of chlorination over the past 35 years; what the changes have been and why?” [Peter J. Royce.]



Steep mountainside logging of mainly Douglas fir, north of Cedar Creek, Coquitlam watershed.

#72. The management of watersheds in all areas of the province may be affected by the decision this board makes, and therefore full awareness by voting members of the board, of the efficacy of management plans is imperative. As a professional forester working in the Okanagan for the past seventeen years, I can assure you that, given accurate data, a management plan for a watershed can be drafted that ensures negligible impact from harvesting and the associated activities. Your greatest concern should be the potential for a catastrophe if the forests are left unmanaged, and I therefore urge you to support the continuation of the management of this resource. [R.J. Reid, Registered Professional Forester, Vernon, B.C.]

#73. I strongly oppose the suggestion of a “hands-off approach”.... I could find no scientific data that made me believe this is a proven course to follow. In particular the long term road plan is vital when you consider the events of August 10, 1990, and subsequent (11) fires that were quickly extinguished. [G.W. Mather]

#74. The Seymour Demonstration Forest offers the public the unique opportunity of viewing forestry and logging practice. This education is not only invaluable but necessary with the environmental and economic concerns of today. Water quality is important, but harvesting has been going on in this area since the turn of the century. To suggest that this winter's "muddy water" was due to logging in the watershed is unfounded. [S. Linda McMullan]



55-foot circumference cedar stump (the "tea cup") from the logging in the early 1920s in the off-catchment lands of the lower Seymour (Demonstration Forest), near the 5 kilometer mark.

#75. I am comfortable with the Panel's findings.... Certainly a ballot cast against the GVRD's first rate program would be a vote based on emotion not scientific fact. [Tim Quarles]

#78. I would like to see wise use of our forests, and I can't see why stopping all safe harvesting practices would be beneficial since you've already had a private review done. Let's stop spending our tax payers dollars on unneeded studies. [Frances Alblas.]

#80. I am a father of 7 children, if this moratorium takes effect it would be a very sad day indeed. My children have experienced the on hands tour of the Seymour Demonstration Forest and were quite excited upon their return. [Dr. A. Alblas.]

#79. The problem with high turbidity from a public health perspective is that if bacteria are introduced into the system, it is difficult to treat the water to rid it of the bacteria. Therefore, while turbidity itself is not a health hazard, it can cause problems for the system. The MHOs (Medical Health Officers) do not wish anything done in the watershed that could damage the water quality, now or in the future. Not being experts on logging, the MHOs' views on this topic are no more valid than any other group. However, from the presentations that we have heard, it is our view that some selective logging should be allowed now and in the future. From an aesthetic point, we do not understand why clear-cut logging would be used so close to a metropolitan area. The forests around Vancouver will be seen by more people than the remote stands that are being saved. [F.J. Blatherwick, M.D., Medical Health Officer, Secretary to the Board]



Logging truck leaving Capilano Watershed gate on left, road up to Grouse Mountain Skyride to right.

#81. It has recently come to my attention that a study was done on the logging and road building practices being done in the watersheds. It was done with a considerable amount of time and effort by a lot of independent companies. I believe that their findings were such that the logging and road building practices in the 3 watersheds were found to not be affecting our water. It's getting to the point, when somebody doesn't like what was found in a study they pressure politicians to do it again! [John Newman]

#83. Our unequivocal conclusion is that the logging practices that are conducted in the watershed are "Model Practices." They reflect the highest standards of logging possible. In consultations with experienced loggers from throughout coastal British Columbia, in their opinion, if GVRD logging practices were carried out throughout the coast there would be no environmental logging problems. It was pointed out that there is evidence of many such (Yellowstone fire) catastrophic events occurring on the B.C. coast. By the well managed harvesting of mature timber these natural cycles can be controlled. A hands-off approach without harvesting will almost certainly result in a major fire at some point, even with intensive fire suppression. While landslides did occur, it appears that there was

not an increased prevalence in logged areas over unlogged areas and they were not the cause of turbidity. It appears to us that some groups are trying to find fault with logging by trying to connect logging to landslides and landslides to turbidity where no connection exists. [Jim Parker, chairman, Environment Committee, IWA Local 1-217]

#84. Prevention of development of this land has exacerbated many of the activities which have devastated agricultural lands, fisheries, and flyways - in order to relieve the pressure on these irreplaceable assets and to allow people to continue moving into this part of the world. People have the right to live in the watershed areas in order to divert them from the more sensitive areas. It may be late, but we might be able to save some of the estuary if we are prepared to accept some damage to the watersheds. [Harold Goldfeder]

#85. The watersheds are a model of logging and water quality control, which all other operations throughout B.C. should follow suit. [Jake Sloodweg.]



Upper east side of the Seymour Demonstration Forest "Unmanaged" Zone.

#86. ... the main issue that we are concerned about is logging. It is our firm belief that LOGGING OF ANY KIND CANNOT BE JUSTIFIED IN THE GVRD WATERSHEDS, IS HELPING TO ACCELERATE THE LOSS OF SEVERAL ENDANGERED AND THREATENED SPECIES, AND SHOULD BE TERMINATED IMMEDIATELY. A strong argument against allowing any logging in the GVRD watersheds is the presence of Spotted Owls in at least three localities -- two in the Capilano watershed and one in the Seymour watershed. The Spotted Owl is an obligate inhabitant of old-growth conifer forest, and each pair requires several thousand acres of forest to breed successfully. There are believed to be no more than 25 breeding pairs in Canada, all of them in southwestern B.C. The Spotted Owl is in immediate danger of elimination from Canada because of habitat loss caused by logging. ... strong evidence was obtained that Marbled Murrelets were breeding in an area of the

Capilano watershed. However, this area was slated for logging in 1991! Although I am told that logging was temporarily deferred on this area, what is needed is not a temporary deferral, but a total ban. Even if the GVRD watershed is completely protected, Marbled Murrelets will soon have few nesting areas left in the Lower Mainland, at current rates of logging of old-growth forest. The Vaux's Swift, a bird which nests inside hollow, dead trees, has also declined greatly in numbers, and undoubtedly nests in the GVRD watersheds. There are certainly quite a few species of plants and invertebrates which are suffering the same fate as these three bird species, but we know little about it because adequate environmental impact studies have never been done. Given the minimal benefits of allowing logging to proceed, and the severe negative impacts, we call for a total and immediate cessation of all logging operations in the watersheds. [Wayne C. Weber, Ph.D, The Vancouver Natural History Society and B.C. Field Ornithologists]



Greater Vancouver Watersheds log boom, ready to be escorted to the highest bidder.

#87. It is important to remember that managing an area for water quality requires a different approach than managing for timber, wildlife, recreation, or other values. There are those who feel that the highest water quality can be achieved by leaving an area in its “natural state”, untouched by human activity. In reality, nothing could be further from the truth. While it can be said overall, unmanaged pristine forests contain mostly pristine pure waters, at the same time it should also be noted that in natural areas it makes no difference if creeks get muddy or overflow their banks from time to time. But nature did not design any natural watersheds to be a drinking-water supply area for over a million people! In the natural course of events, woody debris from the forests eventually finds its way into creeks, streams and lakes all the way to the ocean.... The problem for a drinking water supply area is that natural woody debris in the creeks is undesirable. Tree roots and tree trunks in the rivers and streams cause stream bank erosion, changes in stream courses and the resultant muddying of the water in these naturally altered streams. Obviously, intervention and removal of this natural decaying debris from creeks, in drinking water supply areas, can have a positive effect on water clarity and purity. In order to insure a reliable source of clear drinking water, there must be a human, managed presence. Logging activities should be used to accommodate that human water quality management presence by

providing access to the water district via a road system, as well as logging equipment used to remove undesirable debris from river beds.” [Danny Taylor, Director, Share Our Forests]

#88. ... I am supportive of the “leading edge” approach of advocacy groups to stimulate positive movement on environmental issues; however, I would be appalled if decisions like the fate of the GVWD Watershed Management Program were based on partially informed public out-cry and without due consideration of expert independent study. [Spencer MacGillivray, Second Nature, Environmentally Sound Products & Services]

#89. I thus strongly object to the ongoing practice of clear-cut logging in our watershed areas, as well as to any potential use of these areas for building alternate highway access to the Squamish/Whistler region. We must not allow the quality of our drinking water to be jeopardized in any such way. [Manfred Winter]

#90. One of the oddest features of “management” by the GVRD is its zeal to keep people (e.g. hikers) out of the watershed while allowing road builders and loggers in. An example of that occurred on the very weekend before I received your letter, Sunday, 21 April 1991. On that occasion I was hiking from the Seymour Demonstration Forest Parking lot to the Seymour Falls dam on the east side of the Seymour River. Near Rolf Lake (Lost Lake) I was passed by two men on bicycles. A few minutes later, they returned followed by a GVRD pickup and a RCMP truck! Forbidden to cycle along this gravel road, with the full majesty of the GVRD and police to make sure! Logging trucks are alright, though.” “On the east side, forest managers have been at work with machetes, by the look of it. Trees have been felled and left on the forest floor making progress by foot virtually impossible. [Peter Harnetty]

#91. After reading the report, it was clear to me that a genuine effort was made to select a panel who had the background and experience to adequately address the basic issues of appropriate watershed management practice. It was also clear to me that the panel had made a sincere attempt to consider all available information and to develop recommendations based on their best interpretation of this information that would be in the best interest of the customers of the GVRD. Again, I can only stress that it appears to me that you have selected about an objective and qualified a panel as you could have. I would be unfortunate if you did not follow their recommendations. In fact if you do not, it might later prove to be irresponsible. [John Hammons]

#93. ... I have read a number of statements to the media by GVRD staff and others to be extremely unrepresentative of a vast volume of scientific research in the field of logging and sediment-stream relationships.... For your information, I have two degrees in aquatic biology, have collected thousands of samples from B.C. streams affected by land use activities (including the Capilano and Coquitlam Watersheds) and have been qualified as a sediment expert in B.C. courts on over 50 occasions. I feel I do have a degree of expertise in this area. Comments from GVRD’s own panel member (Greg Kirmeyer) that fire, insects and natural erosion threaten to foul the water supply (Vancouver Sun, May 3, 1991), if accurate, is ludicrous and scientifically unsound. The vast majority of scientific literature indicates that the building of roads and the logging of a watershed results in altered flow patterns and is almost always accompanied by more debris and sediment input into the stream. Also, especially after

slash burning, more dissolved solids enter the streams.

The above conclusions are contained in many thorough watershed studies conducted in the Pacific Northwest of Canada and the United States. Most of these studies have been conducted by fisheries agencies, however, since we are relating to the same scientific parameters, the results are directly applicable to the GVRD watersheds. The duration, and scientific design of many of these studies will be well beyond the scope of any GVRD studies relating road building and logging to water quality. Should the GVRD really be serious about logging-related impacts on water quality, they must make an effort to contact some excellent researchers that have spent many years studying the issue. Normally these experts would not volunteer briefs because the GVRD watersheds are behind gates and removed from public access and the fishery is therefore generally non-existent. Also, downstream impacts are mitigated by the reservoir impoundments (ie. they function like large settling ponds). In the 1970's I was involved in studies in the Coquitlam and Capilano GVRD Watersheds. The road construction techniques I saw in those areas were no better than what I have seen in countless other watersheds. As your panel should have learned, it is this road construction that can cause a large percentage of sediment to enter local water courses. To argue that roads and logging is important to control insect attack and wildfire indicates some degree of a lack of common sense. If disease and natural wildfire is so prevalent on the coast, why can one fly at any time over our old growth forests along the coast and see little more than a virtual continuous forest of green? If natural wildfire is as prevalent as some would have us believe, why are the old growth stands so magnificent and most often 200 to over 400 years old. Where on the coast do we have high incidence of electrical storms which are the chief natural cause of wildfire? Should the insects and the wildfire have lived up to the expectations of the watershed experts, why are our old growth coastal forest not naturally maintained at a much younger age?

I can only emphasize the need for your staff to do a proper review of the scientific literature or call upon some very qualified B.C. scientists that have studied logging-sediment interrelationships for many years and are experts in the field. The media reported views of Mr. Kirmeyer and other GVRD staff and those associated with the logging industry are without a good scientific basis. **To conclude that old growth forests generate more dirty water than an area subject to road building and logging is a case of wishful thinking so as to support some hidden agenda.**

In conclusion, the growth of the GVRD is not environmentally sustainable and each year we convert over 2000 acres of land into urban development. Why can our watersheds not be set aside as wilderness areas? They do not have to be logged to produce clean water. In fact, if they are left in their forested state they will produce cleaner water most of the time. To have a panel member that advocates logging makes me suspicious of the open mindedness of the panel. [Otto Langer, R.P. Bio.]

#95. I have listened to the media's reports on the claims put forward by the WCWC and have become very concerned, until I read the report put out by the GVRD. I am not sure what it is that has the WCWC concerned? Have they not reviewed the report that was compiled by a team of 8 independent consultants as WCWC has been asking for? [Charlotte Sproule]

#96. The study showed no proof that current harvesting and road building practices have caused an adverse effect to drinking water quality. In fact the history records showed that there was a bigger problem with drinking water quality before the current harvesting program was started in 1961 to control an insect outbreak. [David Sproule]

#99. As a biologist I am alarmed about some of the conclusions presented... as well as some of the recommendations based on those conclusions. Having scrutinized the documentation used to reach those conclusions, I am convinced they are unwarranted. More data of better quality, more effective analysis of that data, and a more thorough, critical review of the relevant scientific literature are required before the recommended management policy can be considered to have an acceptable level of risk for maintenance of water quality, which is the only legal mandate of the GVWD. Two very controversial conclusions are presented in the report:

1. That current management practices which include extensive road building and obligatory clear-cut tree harvesting have not had an adverse effect on water quality.
2. That continued roadbuilding and “patch” clear-cutting are necessary to protect the watersheds from the adverse effects of fires, insects, and disease.

This is a radical proposal, presented in quasi-scientific terms, which is unsupported by the experimental and observational data presented in the Draft Report. Moreover, it contradicts a large body of published scientific literature which concludes that undisturbed coastal old growth rain forest is most resistant to fire, insects, and disease, and maintains the highest quality of water when undisturbed by man. The failure of the Panel in preparing its Draft Report to acknowledge that literature and present its rationale for repudiating it is inexcusable; this omission demonstrates an unacceptable level of ignorance and ineptitude in preparing a “scientific” document, if not outright bias. The critical issue is not whether flooding and high turbidity ever occur in undisturbed watersheds, but whether they are exacerbated as a result of logging activities. I consider the proposed policy to be radical and potentially extremely costly, most likely to cause irreparable damage. My opinion is shared by other scientists and a large segment of the public. A scientifically cautious, politically prudent approach at this time would be to initiate as soon as possible a moratorium on road building and “patch” clear cutting in the GVWD watersheds (these are “patches” only by the standards of the clear-cut harvesting being carried out elsewhere in the province of B.C.; they would be disallowed in many other parts of the world as far too large). [Bruce P. Brandhorst, Ph.D., professor of Biological Sciences, S.F.U.]



#100. As a Registered Professional Forester who, over the past 15 years, has worked for a number of forest companies throughout B.C. I think I can safely say that I have seen the entire spectrum of forestry practices, from good to bad. The practices in Seymour Watershed are exemplary. The forest management practices are, in my opinion, carried out with a clear understanding that the first and foremost goal of these lands is producing high quality drinking water. It is my opinion, that the call to stop timber harvesting on these lands is coming from a few special interest groups who are attempting to further their own political agendas. [Gary Lawson, Registered Professional Forester, Sandspit, Queen Charlottes]

#101. Forest harvesting and regeneration have produced a mosaic of age classes and forest cover types within the watershed. There are a number of silvicultural advantages of a more diverse, multi-aged forest stand. The resultant forest will be more resistant to major insect infestations, forest fires or simply, the effects of natural decline within an over mature forest stand. More importantly, the primary objective of forest management practices in the Greater Vancouver watershed is to maintain the highest level of water quality possible. [R. Mark Beecroft, Registered Professional Forester, Sandspit]



GVWD log boom holding area, just east of the Second Narrows Bridge.

#103. I am confident that the quality of drinking water in the Lower Mainland is not being compromised by forest management activities in the watersheds. I urge you to accept the consultant's report. A review of the evidence gathered by qualified experts convinces me, as it should you, that the

pro-active low-level of management of watershed forest lands, including timber harvesting, is the best policy for the watershed. [Donald E. Shaw, Registered Professional Forester.]

#104. In 1960 the Vancouver Council of Women, an umbrella group of women's organizations established in Vancouver in 1894, became concerned with the logging that was taking place on the North Shore mountain backdrop to the City of Vancouver and a resolution to this effect was presented to the Provincial Government. This concern increased as logging was authorized in the hitherto sacred precinct of the Watershed that we were told supplied the purest water in the world to Vancouver and its environs. Since pure water protection not timber supply is the stated objective for watershed management and the present situation would seem to contradict that objective, the Vancouver Council of Women urges that a moratorium be placed on watershed logging. [Patricia M. Russell, chairman, Ecology Committee, Vancouver Council of Women]

#105. We must also recognize the risks of a hands-off, no-management policy, particularly the risks associated with extensive wildfire: Unacceptably high erosion and sediment production on sloping terrain, due to extensive exposure of mineral soil by wildfire. The possibility of a catastrophic erosion and sediment production caused by a hydrophobic (non-wettable) soil condition induced by wildfire. Fuel management (removing fuels at some locations, interrupting the continuity of fuels, and other measures to reduce the tendency for a major fire to build up and spread). Management for biodiversity and ecosystem stability (maintaining a forest resistant to major insect outbreaks, so as to reduce the risk of having extensive dead timber as fuel). In some cases, this would amount to leaving old growth forest essentially intact; in others, it may involve stand management to change species and age class composition of the forest. In my opinion, some of the objections raised about the landslide data analysis used in the Study Team's report are well founded. However, I am not convinced that anything worthwhile is to be gained by re-analysis. The fact that landslides have occurred in recently logged and roaded terrain in the watersheds indicates that operations are entering unstable areas where better stability evaluations are needed to guide decision-making. [T.M. Ballard, professor, Forest Soil Sciences, U.B.C.]

#106. I wish to go on record as supporting the GVWD's Watershed Management Program. Their harvesting of timber as a sustained yield basis is of benefit both to the GVRD - financially - and more importantly to the people of Vancouver by having a water supply surrounded by a healthy multi-aged forest. [A.E. Orr-Ewing]

#108. The program is an example of people deriving an economic benefit from a overmature, decaying forest, while maintaining very high standards of protection for all of the additional values found in the watersheds. Your leadership will be important to the establishment of NEW - OXYGEN producing forests for our children and grandchildren. [Keith Hunter, Queen Charlotte City, B.C.]

#109. I have observed that there is very apparently an unfortunate polarization of people's viewpoints on issues involving the watersheds, especially with the logging issue. It seems that non-apathetic environmentalists are perceived in a negative fashion and this shouldn't be the case. Right or wrong, it seems that some public attention is based on the non-technical aesthetic perceived value of the watersheds. Perhaps the terms of reference or purpose of direction of the study should include the

aesthetic value as one criteria in the decision making process. Human emotions on issues can sometimes for outweigh technical considerations. A very important issue with the study is with the choice of the Panel Members. If the public potentially can have a perception of a potential conflict of interest, then that should be dealt with. Perhaps consider to include a knowledgeable person which has the same point of view of environmentalists. Who chose the Panel Members and how? The present report seems to be missing some backup reasoning and evidence. ... there is little or no evidence referenced for the reader to demonstrate why and how the Panel Members reached their decision. A weighted decision process was used which is good, but no information is provided to the reader to allow the reader to see the reasoning. Such a decision could be very subjective and it is a very important decision in the study, so concentration on this area could help minimize skeptical readers. [Blair Yochim, Professional Engineer]



APPENDIX D: NEWSPAPER ARTICLES

LOGGING

Vancouver Sun February 26, 1992

Battle of the watersheds

They will log that watershed over my dead body.
— E. A. Cleveland

WILL KOOP
... Vancouver freelance writer.

CLEVELAND, the first commissioner of the Greater Vancouver water district (GVWD) has been dead for 30 years and the battle against watershed loggers is long since lost.

The substance of the argument, however, has stood unchanged since Cleveland began the fight in the 1920s.



Cleveland was the provincial comptroller of water rights and a consulting engineer in the provincial lands department. In October 1922, in a report on the Capilano and Seymour watersheds, he concluded that the future of the water supply was at risk because of logging.

"The alienated timber in the watershed should be completely controlled by those responsible for the supply of water ...," he wrote. "The pre-eminent object to be attained is the maintenance of an adequate supply of pure (i.e. unpolluted) water — all other considerations are subordinate; and to that end the watershed should be preserved inviolate."

The GVWD officially began operating on Feb. 3, 1926 with Cleveland as commissioner.

Despite Cleveland's determination, would-be loggers worked tirelessly through the 1930s, '40s, and '50s for the rights to resume logging in the watershed.

Their argument was best expressed by George Allen, dean of forestry at the University of B.C. in the early 1950s:

"Modern-day forestry looks at it this way. If you don't cut timber when it is mature, nature will drop the trees for you by wind, bugs, or fire. Nature does the harvesting that way and everybody loses."

"Too many people look on a stand of 500-year-old timber as a gold mine — try to make it last. That's waste, not conservation ... It's really like a slow-growing farm. In 100 years it can produce a whole new

Challengers changed since 1920s, but the argument is the same



COQUITLAM WATERSHED: one of areas affected by logging controversy

FILES/BRIAN KENT

crop, if properly managed. And the new one will be healthier and lusher than the last."

That quote, which now rests in old files at the Vancouver Archives, was obtained in October, 1953, by reporter Doug Leiterman, who was working on a series about the watershed for the *Daily Province*.

In the series, Leiterman went on to quote Dean Allen saying: "The great danger (in the watershed) is that there is no transportation in there to control fires ... The more old trees you take out the less chance of fire or disease destroying your watershed. That's where the timber-cropping should start."

Timber cropping is the phrase, said another expert in Leiterman's story. "Don't call it logging or you'll make the water board's hair stand up on end."

The GVWD commissioner of the day was Theodore Berry, man who shared Ernest Cleveland's thoughts on logging.

"The city of Vancouver paid large sums of money to get the watershed out of the loggers' hands," Berry told Leiterman. "We have no intention of letting them back in now ... The water board holds the area in trust

Don't call it logging or you'll make water board's hair stand up on end

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for the people and will continue to do so.

"We're in the water supply business, not the logging business ... It would be a great pity to take chances. Some day the people will thank those of us who today may be considered fanatical in our desire to protect the watershed."

While that sounds much like the

black-and-white debate that rages today, in 1953 there was a grey area, a third party with an interest in the debate. C.D. Schultz & Co. had been hired by the GVWD in October 1953 to conduct a survey of the forests in the watersheds.

The Schultz Co. was aware of Leiterman's work and was apparently concerned about public sentiment regarding the stories. In a letter to Commissioner Berry also on file in the Vancouver archives, the Schultz Co. reported: "We are pleased to advise that the *Daily Province* has seen fit to cancel the proposed story prepared this fall by one of their reporters ... Their decision was no doubt based on the fact that you as commissioner of the GVWD and Dr. George Allen ... were each misquoted and the figures used in the articles were far from factual or applicable ..."

After completing the general survey in February, 1954, Schultz Co. went on to conduct a comprehensive

inventory of watershed timber. It then prepared a two-volume water management report which was to be released at a special water board meeting in November 1955.

In three days leading up to that meeting, there was an extremely heavy rainfall, with up to 10 inches falling in the watershed on one day. Schultz Co. cancelled the meeting.

In a confidential internal memo, again now filed in the archives, Schultz Co. notes the obvious erosion caused by the heavy rain and says: "Because of the floods ... it was inadvisable to present the GVWD board the report in which is mentioned the cutting of timber ... The report should be reviewed carefully and where possible stress the fact that floods need not result from proper cutting."

"C.D. Schultz & Co. will go over the report and make the necessary changes and additions ... Present public relations should be directed towards educating all concerned with the fact that there can be flood control through proper cutting and the multiple use of the watershed, for water yield and timber."

The altered report was submitted in December 1956, one year later.

The transition from the water board's resolution of no logging to the present-day policy of logging in the watersheds was rooted in the Schultz Co. reports and their recommendations.

To promote logging in the public's water supply, it was important for the Schultz Co. to keep a low profile. That profile and the company's credibility crumbled in 1958 when founder C.D. Schultz was charged with criminal conspiracy and bribery along with the provincial minister of lands, Robert Sommers.

Schultz's case ended with a hung jury, but his business never recovered.

While the debate was still brewing, Berry had circulated the Leiterman stories to some of his staff members, one of whom, William Angus, the watersheds' inspector and ranger, took a parting shot at the pro-logging argument, particularly that presented by UBC's Dean Allen:

"I wonder if the endowment of our forestry faculties by the large timber operators influences the thinking of the heads of the said faculties ... The poor payer of water rates is not organized, so God help him against the timber interests lobby." □

Priority is water quality: the profits are incidental

DOUGLAS MacKAY
... former manager of the Greater Vancouver Regional District.

SEVERAL recent articles have referred to the need for the Greater Vancouver regional district and the province to change their agreements to ensure that water quality is the top priority in managing the Greater Vancouver watersheds.

These articles also suggest that logging and the resulting profit are now the driving forces behind the water district's watershed man-



MacKAY

agement program. This is simply not true. The watershed leases already provide that water quality is the highest priority.

The specific section in the lease dealing with water quality was insisted on by the water district management (Theo Berry, Ken Patrick and Frank Bunnell) when the leases were last reviewed 30 years ago. Ray Williston, then minister of lands, forests and water resources, agreed on behalf of the province to this provision.

Since that time, the watershed management program has been carefully structured in accordance with this provision. Profit has always been secondary to good watershed management. Any profit that has resulted from logging has been used

to offset losses and watershed management expenses.

The original watershed management program included plans to remove decadent and diseased wood, to provide access for fire protection and security; and to immediately replant harvested areas. These practices have continued.

A healthy and vigorous forest will best protect the watersheds and yield the highest quality water. The only way to provide this is through an intelligent management program that includes selective harvesting.

The water district has always relied on expert advice in planning its work. The recent studies and reports prepared by an independent multi-disciplinary panel have confirmed the appropriate nature of the

district's watershed management. These studies were widely circulated for comment.

It seems to me that the Western Canada Wilderness Committee and its supporters, with an apparent agenda to stop all logging in British Columbia, are the only ones with a different opinion.

Also, the impression has been left that the watersheds are pristine areas of old-growth forest. The fact is that in the last century and the early part of this century the watersheds, along with most of the North Shore, were extensively logged and burned.

In particular, the Capilano Valley was the site of logging for a considerable time. A logging railway stretched well into the valley.

One of the first activities of the water district, after it was formed in 1926, was to acquire the private timber rights and lands to stop the unrestricted logging.

Without question, careful management of the watersheds is necessary. The water district has all the authority it needs to do this. The harvesting activities are part of overall watershed management. They have been carefully developed by the district to ensure the quality of water supply.

It seems to be a custom in our society to make major policy decisions by appealing to emotion rather than to evaluate factual information. This approach may make exciting stories but it does not aid in the development of sound public policy. □

Living

Cut up over fate of Vancouver's trees

Yesterday, I flew back from Vancouver, British Columbia. The cherry trees were just starting to bloom there, and in a week or so that lovely city will have the finest displays of cherry trees in the world, better than I have seen in cities in Japan even.

Every time I go back to Vancouver, where I once worked as an emergency officer for the Environment Protection Service, the great sizes, numbers and varieties of trees in the city delights and amazes me. There were people, many decades ago, of great vision and knowledge in the selection, planting and tending of trees.

My old friend, Fred Koeh, lives on West 12th Street, in the 2,800th block. Two summers ago, I was sitting out on his back porch, enjoying chilled wine, barbecued salmon and chicken, music and old friends.

A breeze came, and a confetti of petals showered down over the roof from the avenue in front of the house. One creamy white petal landed in my glass of white wine, and I told my Canadian friends of how this was considered to be of great fortune in the case of cherry blossom petals in the marvelous Japanese custom of "hanami."

Those petals showering us though were not cherry, but horse chestnut, two great rows of horse chestnuts that were as big around the trunk as a heavyweight wrestler.

Horse chestnut trees of that size in Kurohime, where I live, would be around 100 to 150 years old. Fred reckoned that these trees were about 60 years old. They had, however, been expertly pollarded in their youth, thickening and strengthening the trunks, and sending powerful branches aloft like the arms of candelabra, soon to be lit with a myriad flames of creamy white blossoms.

I keep bees. Any one of those hundreds of trees would have given my bees around five gallons of pure honey. I fantasized about having dozens of bee hives up out of harm's way on the top of a building somewhere in Vancouver, not too high up, of course, but away from the chance of the hives being meddled with, and, therefore, the danger of people being stung.

No doubt there are regulations that would prevent this, even though the trees themselves would benefit. However, apart from my fantasies of making a fortune in honey in Vancouver, there really are so many wonderful flowering trees, and if anybody cuts one of them, there is a great hue and cry.



Clive William Nicol was born in 1940 in south Wales. He went to Canada when he was 17 and joined an Arctic expedition team. He visited the Arctic region more than a dozen times as a member of a Canadian government research team. In 1962 he visited Japan, and stayed for 2 1/2 years in study of the nation's fishing industry. When he returned, he wrote a book, "The Little Rebel" (Chilisa). He has published more than 60 books in Japan. His most renowned works include "The Little Rebel" (Chilisa), "Harpoon" (Isana), and the "Witches Wood" (Majo to Mori). He won first prize in the 8th Japanese TV Writers Association screenplay contest for his 1982 short stories titled "Sunset of Bernard Leach".

Nicol Naturally

Then of course, in Vancouver, you have some wonderful great trees in the parks, like Stanley Park. So one would reckon that the people of Vancouver, in general, and the people of British Columbia as a whole, love fine great trees.

However, all is far from well. Flying out of Vancouver and heading up the coast, I looked down to see great swaths of clear-cut forest, mostly on steep slopes. I saw logging roads crisscrossing the mountains, and scars of erosion everywhere. The truth is that outside of the parks,

and the highly accessible places that the public can see.

Vancouver is razing old growth forest, centuries old cedars and other trees, and this is being done right in the watershed areas, by the Greater Vancouver Regional District. Logging activities,

loss of the absorbent property of healthy forest, the increase of silt and organic debris in the waters of Vancouver is marked, and the government answer to that is to use chemicals to purify the water.

In 1926, the first commissioner of the Great Vancouver Water District, Ernest Cleveland, strongly opposed any logging activity and all attempts to open watersheds to logging. Cleveland died in 1952, and one month after his death a logging consulting firm was hired, with the predictable results that the consultant recommended logging of the watershed areas.

This is nonsense, and unfortunately, I don't have time to go over the evidence to prove this nonsense, but I will say that industry-connected foresters trot out the same diatribes as excuses to rape ancient forests all over the world.

Anyway, water quality in Vancouver is getting worse. It definitely is.

Why? Well, again, look to Japan, and to Korea, scrambling to catch up in this unsatiable greed for forest products. I fought the cutting of ancient trees in my home area of Kurohime, I reckon that if you or your father didn't plant it, then you have no right to cut it, and if an ancient tree is to be cut, then each and every one should be reviewed and studied, and not by the government or the logging industry, either.

I think much more money should be put into research and planning of forests, but we must be very careful when the forest departments and logging companies talk about "rejuvenating" old growth. They usually mean that they want to cut down all the big old trees they can find because it is such trees that fetch the best prices. If you go to lumber yards and inspect the butts of these centuries old trees, you will usually find that they are not rotten, but very healthy, which is of course why the loggers want them.

When the wonderful flowering trees were planted to line the streets of Vancouver, around the time of that visionary Ernest Cleveland, there must have been a core of awareness in the city, an appreciation of pure water and beauty. I think it is again awakening.

And when you visit Vancouver, think about all those greedy log buyers from Japan, and look what they have already done to the lovely woods of your own nation.



Is Logging Threatening Our Water?

Will Koop wonders why B.C.'s best trees are being cut on our doorstep ~ By Ben Parfitt

Like most good students of life, Will Koop has a healthy scepticism of things official. So when foresters with the Greater Vancouver Regional District arranged a tour for him and a handful of other Lower Mainland residents concerned about logging in the Capilano, Seymour, and Coquitlam watersheds, he quickly questioned the GVRD's carefully arranged itinerary.

As he bounced about in the yellow school bus rented for the occasion, Koop realised the only thing the foresters seemed intent on showing him were stands of second-growth trees—areas of forest cut or burned long before. The GVRD wanted Koop and company to see how systematically they were going about logging some of the young trees in these stands to allow the surrounding trees to grow.

What they weren't interested in doing, Koop recalls, was letting the group see much of the clearcutting of much older, more magnificent trees nearby. So, as the bus weaved along the logging road in the Capilano watershed this past July, the group prevailed upon GVRD officials to take them to see some of the old-growth trees slated to be cut later that year.

The bus headed up the watershed, stopping a brief distance from East Capilano Creek.

"We stopped along the road there and we got out of the bus and we had a little talk," Koop recalls. As Derek Bonin, GVRD superintendent of forest operations, led the group into the trees, Koop held back—and like a rebellious school kid on a field trip—scurried off into the woods.

"I immediately headed off to the east, because I saw some big cedars there," Koop says. "At that point, I told some people to come take a look, and about eight people came over. There were some large cedars that had fallen down by natural causes. They were quite something to see. Then I went up the slope by myself, higher up, and came across a twin-peaked enormous cedar. I measured it and approximated it to be anywhere between 45 and 50 feet in circumference. It was magnificent!"

As Koop looked around the cathedral of centuries-old trees, however, he became alarmed at the latter-day hieroglyphs on many tree trunks. At breast level on almost all the trees he could see, somebody had been busy spray-painting. "A lot of the cedars there had graffiti on them, red and yellow markings," Koop recalls. Most were painted with a large X, a sign that these trees were soon to be "X-terminated" by loggers armed with chain-saws.

Not knowing if he would ever see the tree again, Koop hastily set up his camera and tripod, hit the automatic-timer button, and rushed back to the tree's side. Seconds after the shutter snapped, he packed his bag and ran.

"The bus was honking below, and it was quite a way back down."

In a debate that has pitted environmental, labour, forest industry, and health groups against each other, Koop is the consummate loner. And it is perhaps that quality that most explains why he, more than many other people who have looked at the logging-versus-water-quality debate, has unearthed so much information about the history of logging in the watersheds and about what is actually there on the ground.

That's no small feat, because people aren't supposed to trek through the watersheds. The GVRD forbids it as part of a policy that seeks to maintain water quality by ensuring the least possible human contact with the forests under its control.

Koop understands that outlook, even appreciates it. But, given the GVRD's stated goal of protecting and enhancing water quality, he wonders why trucks laden with logs move with impunity up and down a 300-kilometre logging-road network that criss-crosses the valley bottoms and hillsides of the Capilano, Seymour, and Coquitlam watersheds.

Koop, 38, traces his interest in Greater Vancouver's watersheds to May 1991, when he and Vancouver artist Ralf Kelman visited the GVRD's log yard in North Vancouver. But his interest in logging and environmental issues goes back to 1977, when, as a young man, he was hired by a mineral exploration company to do field surveys in the southeastern Yukon.

"It was my baptism in the outdoors," he says. "I saw vast tracts of land that had been untouched by people—roadless areas, a lot of wildlife—what can I say, the great outdoors."



Will Koop traces his intense interest in Greater Vancouver's watersheds—and their magnificent trees—to a visit he and artist Ralf Kelman made in May 1991 to the GVRD's North Shore log yard to see just what was being cut down. It was a wake-up call.

A few years later, Koop was working as an installer and repairman at B.C. Tel. But he'd been bitten by the wilderness bug. Every year, he'd use his holiday time, his banked overtime, and, sometimes, unpaid leaves to explore parts of B.C. On Vancouver Island, he walked around Schoon Lake Park, Long Beach, Gold River, Cape Scott, Port McNeill, and the Carmanah Valley. In the Interior, he hiked the high-and-dry Chilcotin, Wells Gray Park, the Arrow Lakes, the Upper Nass Valley, and Fort St. James, not to mention the Queen Charlotte Islands.

He traces his interest in land-use debates to 1983, when he read an article in *Equinox* magazine. The article spoke about a large and impressive stand of Douglas fir trees on Nimpkish Island and how the area was slated to be logged by Canadian Forest Products.

Koop quickly arranged a visit there, and he's glad he got the chance to see "one of the last significant stands of Douglas fir trees. There were trees there approaching 300 feet tall, and taller."

The next year, most of the best trees were gone. "It was logged, and the area suffered a lot of damage," Koop says. There was a lot of flooding along the river, and adjacent stands of forest—exposed to the high winds by large clearcuts—blew down. The site left Koop deeply troubled, but it didn't diminish his desire to continue his explorations.

So when Koop met Kelman three years ago, and Kelman told him about some large logs at the GVRD's North Shore log yard, it didn't take long for the duo to decide to hop in Koop's van and drive across the Second Narrows Bridge for a closer look.

Koop had heard of Kelman and was curious about him. A long-time artist, Kelman had dabbled in the brutal sport of ultramarathons, something that made him particularly well-suited to the task of surreptitiously exploring Vancouver's watersheds.

"I started to find giant, up to 10-foot [diameter] firs, and nobody had heard about them. It was a real adventure," Kelman says. "I was up there crawling around through the forest, mapping all the big trees I could find."

Kelman says he got no thrill out of "illegally" running through the watersheds. "I wasn't looking for trouble. I'm a law-abiding citizen."

But when it came to a choice between obeying the law and letting a select few people decide which trees should remain and which should go, Kelman said the choice was easy. "There was a tragedy unfolding on the other side of the fence," he says. "I knew they were going to log many of the best trees, and I said, 'Well, who is the criminal here?'"

"I'd like to see people looking at Vancouver's forests as a world-class treasure to be explored," Kelman says. As it stands now, most people have no idea of the size and majesty of what lies just beyond their city. "We have the world's finest trees," Kelman says. "You don't have to go to Vancouver Island, Oregon, or the Cascades to see them."

As Koop and Kelman stood in the log yard that day, it was quite apparent that Vancouver's watersheds also had some of the best, most sought-after softwood timber anywhere in the world. And as Koop gazed at the stacks of logs, their exposed butts showing no sign of rot or decay, he began to wonder what was driving the GVRD to take these giant trees down. His curiosity set him on a different hiking program—through Vancouver's libraries, archives, and the offices of the GVRD's headquarters in Burnaby.

In less than one year, Koop had gathered his research into an impressive 113-page research paper titled "Wake Up Vancouver!" The February 1992 publication has a front-page picture of Kelman beside a healthy, straight Douglas fir tree, 10 feet in diameter, near the banks of Hydraulic Creek in the Seymour Demonstration Forest.

In the report, Koop meticulously sets out how a 30-year-old GVRD policy of not logging the

watersheds was undermined and reversed in the early 1960s. From its inception in 1926, the Greater Vancouver Water District—under its first commissioner, Ernest Cleveland—strongly fought all attempts to open the Capilano, Seymour, and, later, the Coquitlam watersheds to logging. (The water district was then a separate entity, but today it is an arm of the GVRD with jurisdiction over water quality in the region.)

Cleveland (for whom the Capilano watershed's dam is named) maintained throughout his time as commissioner that logging and road-building greatly increased the risk that silt and other organic debris would be deposited in Vancouver's drinking water. Indeed, four years before assuming the post, he argued as provincial controller of water rights that any timber holdings in the watersheds should be taken from logging companies and turned over to city or district control.

The pre-eminent objective to be attained is the maintenance of an adequate supply of pure water—all other considerations are subordinate: and to that end, the watershed should be preserved inviolate," Cleveland wrote in a report to the lands ministry on future ownership options of Vancouver's watersheds.

There were, of course, powerful provincial forces opposed to Cleveland, including then-minister of lands T.D. Pattullo. Pattullo, who often lobbied in Victoria on behalf of the province's burgeoning forest industry, proposed in 1924 that the Capilano Timber Company, which had been logging in the Capilano watershed since 1918, should be granted more logging rights in the area.

Then, as now, all sorts of reasons were given why the timber should come out. In a nutshell, it went something like this. The trees are old. If they aren't cut down, they'll be rendered useless for lumber production and, in all likelihood, burn in some cataclysmic fire, thus ruining Vancouver's drinking water.

In reply, John Davidson, a UBC botany professor, said the Capilano Timber Company had already logged significant stretches of the Capilano watershed, and that logging activity would increase the risk of flooding and erosion. The only reason the company wanted more cutting rights, Davidson said, was because logging had already deforested the valley from just below the reservoir's water intake at Capilano Creek, around Sister's Creek and the slopes of Crown Mountain.

"They want to go higher and higher up the watershed. Vancouver's water supply is of no interest to them; it's the timber they are after, and they mean to get it whether Vancouver survives or not," Davidson told Vancouver's Natural History Society in October 1924.

Koop says what impressed him during his archival research was the tenor of the debate so many years ago. "The battles that were taking place 56 years and more previous to us were no different—in fact, even stronger—than today," he says.

"Throughout the 1930s, 1940s, and 1950s, forest companies and individuals sought permission to log timber, for various reasons, in the watersheds. The GVRD administration was persistent in maintaining its position of no logging," Koop wrote in his research paper. "Mr. Cleveland gained a notorious...albeit respected, reputation from foresters and the forest industry."

Cleveland died in January 1952. One month later, a consulting forester convinced the GVRD to hire a forester. By early 1953, C.D. Schultz & Company, a prominent forestry consulting firm, was hired to survey the state of the forests in all three watersheds.

Late in 1956, Charles Schultz submitted a report to the GVRD that later served as the basis for justifying a return to logging in the watersheds. Once again, the twin forces of evil—bugs and disease—were cited as justification for logging.

"The danger from insects and disease is one of timber loss and increased fire hazard," Schultz wrote. "At this time, the chances of an outbreak of insects in the watershed(s) are considered to be average for the region. The chances of an epidemic will increase as the overmature stands become more decadent."

In short order, limited logging of trees alleged to have been attacked by insects began. By 1963, GVRD commissioner Theodore Berry asked B.C. Forests Minister Ray Williston to allow the GVRD to "protect or improve the quantity and quality of water" through a limited

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Watershed Logging

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program of logging. By 1967, his request was granted. The new policy allowed for logging on a "sustained-yield basis for the purpose of developing, protecting, and improving the water-yielding characteristics of the lands."

In theory, the logging in the Capilano, Seymour, and Coquitlam watersheds should have taken a much different course than logging elsewhere on B.C.'s coast. But Koop says maps provided him by the GVRD tell a different story.

"The level of logging from the 1960s to the mid-1970s was little different from any other place in the province," Koop says. Whether the forest companies were cutting in Vancouver's watersheds or up the coast, they always seemed to find what Koop calls the "low valley-bottom biggies"—the most-prized fir and cedar trees, old but healthy.

At home, Koop is busy at work completing a mapping project outlining every single clearcut in the three watersheds. With a felt pen on large Mylar sheets, he spends his evenings tracing the outline of all the logged forests, many of which parallel the streams emptying into the reservoirs supplying Vancouver's drinking water.

Unrolling his map of the Coquitlam watershed, Koop points to an area known as Cedar Creek, where 24 clearcuts dot both sides of the stream course. "The Cedar Creek area was a low-elevation forest, relatively flat, with extremely big trees. It was relatively easy to get at, with highly rated trees," he says.

Then, unrolling his map of the Capilano watershed, Koop points to a line well up the watershed, where the Capilano Timber Company stopped logging in 1932. When the GVRD



Will Koop found the tree featured overleaf near Cathedral Mountain, shown at the centre of this map.

returned to log the area again in the mid-1960s, they simply began where the old logging ended.

"From Andrews Creek south to Daniels, they took out all the remaining old-growth on the valley bottom next to the river. They took the big stuff right away," Koop says.

In the mid-1970s, things began to change. The clearcuts became smaller and more dis-

persed. But the quality of logs coming out of the watershed didn't diminish. The much-sought-after cedar and fir always found its way out of the watersheds—to be sorted, boomed, and put up for sale by the GVRD.

Last year, Koop journeyed down to the sorting ground with his camera. He came across a stunning pile of fir logs—many of them six feet

in diameter. He set up his camera, put it on automatic timing, and jumped on top of a log near the top of the pile. The image shows Koop dwarfed by the end of a perfectly clear fir of extraordinary quality. The bugs, he mused, must have missed this one. Koop knew these logs, and cedar logs of similar quality, must be of great value, and he was curious to find out just how much they were worth.

In February, he got his answer.

In the main GVRD boardroom, he sat quietly with a throng of anxious log-buyers and watched as sealed bids were opened. It took only a few minutes for the winning bids on 11 booms of logs to be announced—and for the GVRD to be assured of more than \$1.64 million in revenues.

Four of the booms—two hemlock and two cedar—went to E.R. Probyn, a major log-buyer and local lumber manufacturer. Jim Probyn, Probyn's manager of domestic log sales, says the quality of wood put up for sale by the GVRD is, in some cases, the best available anywhere in B.C. "It's usually a fairly high-quality log," Probyn says—particularly the old-growth cedar. "It would certainly be in the top five or 10 percent out there."

Probyn says B.C.'s best overseas customer, Japan, reveres the lumber from Vancouver's backyard. Other countries in the Pacific Rim, such as Korea, are also intensely interested in buying lumber products made from the high-quality logs coming from our watersheds.

Here at home, forest companies want to keep the door open to the watersheds because of the quality of timber available and, perhaps more importantly, because they know if the door is closed here, it might be closed elsewhere.

Predictably, in a presentation to the

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GVWD's water committee in May 1991, Brian McCloy of B.C.'s Council of Forest Industries said forest companies believed the continued health of the watershed's forests and water rested with cutting trees.

"A hands-off approach in the watershed that allows nature to proceed without human intervention would allow for the eventual decline of forest health, increasing the risk of a catastrophic event leading to the degradation of water quality," McCloy said.

Then he added: "There are over 80 community watersheds in B.C. that are also an important source of timber to the forest industry... Many jobs in those 80 communities will be affected by the GVRD decision [to continue or discontinue logging in the watershed]."

Today, McCloy and others in B.C.'s biggest industry have good reason to fear the GVRD is once again changing course. Public outcry, along with warnings from health officials, has led the GVRD to dramatically curb its logging plans this year. The GVRD had scheduled 21 clearcuts in the Coquitlam watershed in 1993. Those plans

have now been scrapped, and the only logging slated for this year will be in the Capilano watershed, where loggers will take down trees that were scheduled to have been logged last year. The GVRD's Derek Bonin says the logging program in the watershed is "going in a new direction".

McCloy agrees: "They [GVRD] haven't shut the door. But it would appear that's the direction that they're heading in. And they're under tremendous pressure, I guess, to preclude logging from the watershed."

"You might quarrel with the fact that they're clearcutting in there. But the size of the clearcuts are very, very small, relative to what you might see in other parts of the province, where timber production [not water quality] is the prime use."

Indeed, McCloy says the GVRD's logging program is among the best in B.C. So good, in fact, that others would be hard-pressed or would go broke trying to replicate it. But that message, he concedes, has been a tough sell, partly because in areas close to home, like the Sunshine Coast, some residents have had their drinking-water sup-

ply spoiled by logging activity.

"Certainly, that's not going to help [our case]," McCloy says. "You know, if you turned the clock back and stood all those trees back up and said, 'Okay, this is the community watershed for Sechelt,' then probably you would manage it the same way Vancouver's watersheds are being managed." But water wasn't deemed to be the priority in that region, McCloy says. Logging was.

So industry is worried, worried big, about losing its foothold in Vancouver's backyard. If the GVRD's watersheds are ruled off-limits, other watersheds may soon follow.

The question is whether or not health organizations such as the B.C. Medical Association can be made to see things McCloy's way—or if they even want to. Already, bacteria levels in the GVRD's reservoir water exceed national guidelines, and the turbidity (cloudiness) of the water is often high, particularly in the Capilano, the first and most heavily logged of Vancouver's watersheds. Add to that a proposal to use a fish-killing combination of chlorine and ammonia to treat the GVRD's drinking water, and you have

a lot of people wondering if even the most carefully planned logging and road-building is a wise thing to be doing in and around our reservoirs.

Clearly, the GVWD's first commissioner thought the best way to protect water quality was to leave the watershed alone. He once called Greater Vancouver's forested slopes, rushing creeks, and reservoirs "an almost invaluable asset" for his and future generations. If left undisturbed, Cleveland once said, the Capilano, Seymour, and Coquitlam watersheds would provide a clean water supply "for all time, so that neither now or in the future will filtration or sterilization of the water be required."

Today, a person like Cleveland would be denigrated in some circles as a selfish preservationist, a man not in touch with the needs of his fellow citizens. But from Koop's vantage point, Cleveland was a man of vision. "He fought chlorination in the '40s. He was opposed to it. There was no need for it."

Today, we talk about dumping substances into our water that kill fish but render it pure. And we're left to wonder why. ■