

**A CRITIQUE OP THE LANDSLIDE REPORT
FROM JOHN MORSE TO THE WATER COMMITTEE,
BEING ITEM 2(D) OF THE FEBRUARY 10TH, 1995
WATER COMMITTEE AGENDA,
AN OVERVIEW OF OTHER RELEVANT DETAILS
WHICH WERE NOT REPORTED ON,
AND SOME GENERAL OBSERVATIONS**

By Will Koop,
March 10th, 1995.

CONTENTS

Executive Summary	2
The Recent Storm Events	3
The Erosion of Information	
A Little Bit of History, A Lot of Denial	5
Disregarding the Associated Facts	7
Slides Through, and Adjacent to, Lands Clearcut Logged	8
The Interplay of Slides on Roads	
What's the Real Story in the Capilano?	16
Problems with Reservoirs – Especially After Forestry Practices	19
What are the Real Costs?	21
The Coquitlam Pipeline Lesson	
Another Tour for the Water Committee (But Not for Anyone Else)	22
Last Thoughts	25
Appendix: The Morse Report and Data	28
1990/1991 Thurber Landslide Map	36
Recent Newspaper Articles	37

EXECUTIVE SUMMARY

Late last November and during late December 1994, three different and intense rain storms brought sudden floods and caused a number of slides in our watersheds. Beginning on December 21st, the Capilano Reservoir intake had to be closed for twenty-one days because of very high turbidity levels. John Morse, GVRD Manager of Water and Construction, provided a brief report for the Water Committee on February 10th, 1995, to account for the events. The report emphasized that all the slides were naturally induced, and that they all either passed over or were stopped by the presence of logging roads. However, the report neglected to mention that some of the slides passed through clearcuts. In addition, the report hypothesized that the Capilano closure was due to the dispersal of fine clay sediments from the reservoir shoreline and from small feeder streams entering the reservoir.

From February 17-20, 1995, another storm produced very heavy rains and snow melt. This event, with Capilano River level one meter higher than last December, caused the Capilano intake to be closed once again, from February 21st to March 13th. This storm and closure was not announced at the March 10th Water Committee meeting, nor an account of resultant damage in the watersheds.

During the late fall and winter seasons, storm patterns dominate the coastal regions. The varying intensities of rainstorms can stress the mountainous landscapes through soil saturation and scouring actions, initiating natural processes of collapse and erosion. These processes, which can periodically affect our water supply systems, are regulated and guarded by the presence of wild forests in our watersheds. Simply, intermingled forest canopies protect the forest floor, and their complex root systems bind the basin soils to provide a source of high quality water.

Unfortunately, there no longer are simple explanations for flood events, the cause of all slides, and turbidity in our watersheds. I believe the overall consequences of roadbuilding and clearcut logging, under the guise of enhancing our water quality, have progressively altered the natural hydrology and destabilized watershed soils. These combined human-induced factors have led to the deposition of materials and sediments into our three watershed reservoirs, factors which are both reducing their holding capacity and creating additional turbidity problems.

In the 1920s' the Greater Vancouver Water District was formed, specifically on wise and stringent legislation, to protect the Greater Vancouver watersheds from the initiated exploits of mining and commercial logging. A significant section of this unique legislation was eroded in the 1960s', when our inter-municipal administration was induced to permit our watershed forests to be logged under a new agreement with the provincial government. This eventually resulted in the way fared establishment of over three hundred kilometres of logging roads and hundreds of clearcuts in our three watersheds.

THE RECENT STORM EVENTS

Periods of prolonged and sometimes intense rainfall are common in the late autumn and winter months of the coastal mountainous regions of B.C. During these seasonal periods, precipitation either falls in the form of snow or rain, depending upon the elevation and temperature. Sudden rise of temperature conditions are not uncommon on the coast, and the combination and degree of high elevation temperature change, snow melt, intensity, and duration of an accompanying rainfall onto melting snow set the stage for what is referred to as a rain-on-snow event. This is what happened on three separate occasions in our watersheds in late November and in late December 1994. These rain-on-snow events resulted in a number of slides on the watersheds' mountain slopes. The slides were composed of varying combinations of heavy snow, soils, forest litter, logging slash, gravel, and boulders.

The second rain-on-snow event, which essentially continued for five days/ from December 16th to 20th, was the most intense. Combined total estimated accumulations of melting snow and rain during this event reached about 360 mm (about fourteen inches) for a single day on December 20th. (Since the three events, there have been additional heavy rain-on-snow events in the watersheds, notably the event from February 17th to 20th, 1995. It is not known what the effects of these storms have been.)

A very brief and superficial report was presented to the Water Committee for their review by John Morse, Manager of Water and Construction. The Morse report accounted for 22 "significant" slides, where significant is defined as accumulated debris material of 100 cubic metres or more. A few of the slides happened in avalanche chutes, a number in steep ravines, and some came through areas which had been clearcut. A list of these slides, the estimated volume of debris, specific storm event, and location were provided on a one page table, along with graphs showing turbidity, rainfall, and snow melt from November 29th to end of December 1994. The report also provided four photographs, two of which showed low-to-medium high water below the main Capilano bridge, and two showing debris material on logging roads in the lower Seymour area. The exact number and locations of "insignificant" slides were not mentioned in the report.

THE EROSION OF INFORMATION

The Morse report concluded that all of these "significant" slides were ONLY natural occurrences, and neglected to provide other crucial information to the Water Committee. This rationale was entirely supported by quick and convenient reference from an inconclusive GVRD consultant's report summarizing landslides and road damage from a previous intense storm event:

"Rain induced landslides involving torrents and floods of coarse (gravel, boulders and logs) and fine (silt, sand and organic fines) debris are natural and relatively frequent phenomena in the mountains of British Columbia, of which the watersheds form part." (Thurber Engineering: *Geotechnical Assessment of 1990-*

1991 Landslide Events in the Greater Vancouver Water District Watersheds.
Executive Summary, page 1)

Natural erosive processes are at work wherever steep terrain conditions exists, no one will deny that. However, this convenient declaration - mother nature being solely responsible for landslides and the resultant turbidity in our reservoirs – is a misleading interpretation. It is a mere half truth, because it fails to account for the overall context, the interrelated influences that the network of approximately 300 kilometres of roads and hundreds of associated clearcuts NOW have in our watersheds during these rain-on-snow events and other yearly episodes of heavy rainfall.

DATE OF EVENTS	CAPILANO	SEYMOUR	COQUITLAM
NOVEMBER 29-30 Capilano Rain: Nov.29 - 60mm Nov.30 - 65mm	NO SLIDES	THREE SLIDES -one slide in cutblock 2-9 (logged 1962/1966)	NINE SLIDES -2 slides in cutblock 3-11 (logged 1977) -one slide in cutblock 3-23 (logged 1982)
DECEMBER 16-20 Capilano Rain: Dec.16 - 53mm Dec.17 - 115mm Dec.18 - 83mm Dec.19 - 125mm Dec.20 - 173mm	NO SLIDES	FIVE SLIDES -one slide in cutblock 2-9 (logged 1962/1966) -one slide in cutblock 2-804 (logged 1978) -one slide in creek beside cutblock 2-94 (logged 1990)	ONE SLIDE -one slide in cutblock 3-37 (logged 1986)
DECEMBER 26-28 Capilano Rain: Dec.26 - 125mm Dec.27 - 37mm Dec.28 - 55mm	THREE SLIDES -one slide in cutblock 1-1 (logged 1964/1965)	NO SLIDES	ONE SLIDE -one slide in creek next to cutblock 3-29 (logged 1983)

Table of Landslide summary data from John Morse Report. (Note: The report did not mention the relationship of individual slides within or adjacent to cutblocks (clearcuts), information which is included here)

The above quote was borrowed from the introductory page of Thurber's Executive Summary. The Summary is presented in such a manner as to make the reader believe that all of the 1990/1991 slides which occurred in our watersheds did so despite the effects from roads and clearcutting. However, in another Thurber report for March 1993, Assessment of Turbidity-Generating Sediment and Transport in the Capilano, Seymour and Coquitlam Watersheds, they state that "almost all the landslides in the watersheds are natural occurrences". So how many weren't and does this comment contradict their general conclusions?

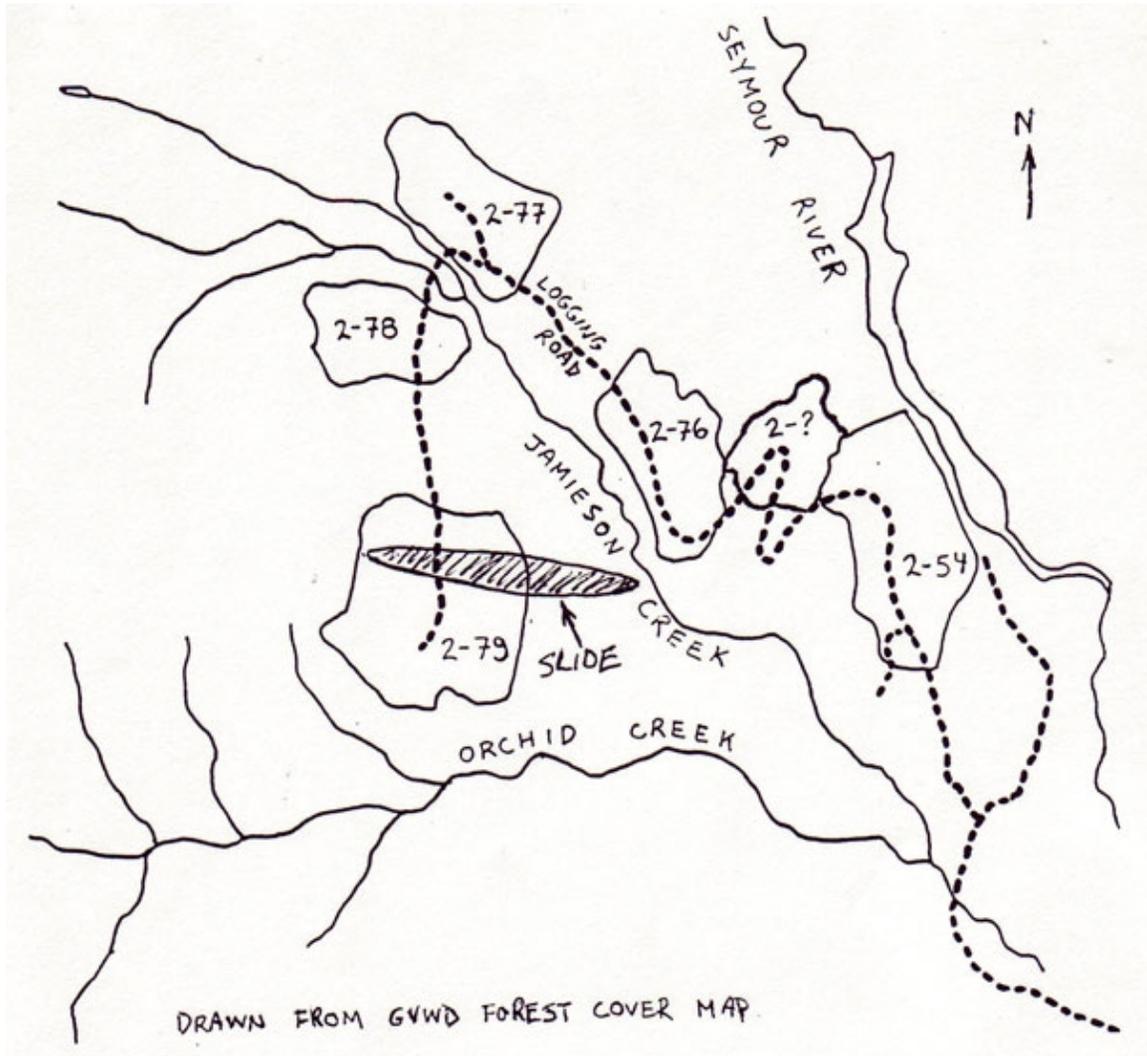
A LITTLE BIT OF HISTORY, A LOT OF DENIAL

When the GVRD received a Tree Farm License from the provincial government in 1967 for sustained yield logging in our watersheds, they were justifiably concerned about legitimizing their controversial program and providing high water quality at the same time. In 1969 it was announced that an experiment would be conducted, together with University of B.C. Forestry staff and the GVRD, in the sub-drainage Jamieson Creek basin of the upper Seymour watershed. Expectations were that this site would become a model for monitoring and predicting the hydrological effects of road building and logging in our three watersheds. After all, the Water District was founded on legislation which halted and forbade commercial logging in the watersheds to maintain high quality drinking water.

The Thurber report (cited above) mentioned the November 1990 rain storm which triggered a major slope failure in the experimental Jamieson drainage in cutblock 2-79, clearcut in 1984 (see below). The steeply inclined area destabilized due to forestry practices. One of the important and most likely contributing factors of this failure was the disintegration of tree roots over an eight year period, roots which once stabilized this slope. The result was a sudden and continuous concentration of sediments to Jamieson Creek, turbidity which eventually reached the Seymour water supply system. The point here is that the experimental model has provided plain and simple evidence of the effects of the GVRD's forestry practices to our water quality, an incident which became rapidly problematic for the GVRD, after which they hired the consulting firm, Thurber Engineering.

The Thurber report of 1990/1991 is an analysis of slides caused by storm events during the late fall and winter season. The Thurber report suggested that the Jamieson clearcut failure would have happened irregardless if the area had not been clearcut and roaded.

In our opinion, each of the clear-cut slide areas was hydrogeologically stressed before the areas were harvested, although evidence of potential instability may not have been visible in the natural forest if a geotechnical inspection had been carried out prior to harvesting. We believe it is likely we would have concluded (emphasis mine) that the probability of slope instability was low from such an inspection. (Executive Summary, section 5)



Geologic evidence at the source and the slide occurrence at the time of harvesting suggests the Jamieson slide may have occurred in a comparable rain storm even if the area remained forested. The Jamieson Branch road trapped some of the slide mass and probably changed the slide behaviour from that of forested conditions. (p.9)

In our opinion, each of the slide sites was hydrogeologically stressed before the slopes were clear-cut. Deterioration of root strength may have had a role, but an uncertain one, in the 6 clear-cut occurrences. At least for the Jamieson Creek event (slide 8), root strength deterioration can have played very little or no part in initiating the slide since the major tree roots were above the failure surface of the slide (photo 7). (p.19)

We indicated in Section 5.3 that the clear-cut landslide sites were hydrogeologically stressed prior to being logged, though evidence of this stress or other geotechnical conditions that might lead to landslides would have been difficult (or impossible) to determine from ground inspection in the natural forest. As indicated in Section 3, we believe that the slides may have occurred if the sites had remained forested. (p.19)

The Thurber report had no scientific data to support such a claim, a claim which conveniently denies that forestry practices are accountable for the disaster, a claim which, by inference, exonerates the GVRD. This is not science, but a sugar-coated pill from the GVRD. It is astounding that our three watersheds, with hundreds of kilometres of roads and hundreds of clearcuts, constructed and cut over a thirty year period, are somehow exempt from the effects that plague forestry operations throughout the province. The GVRD claim is that their forestry practices are the finest in the province, that they have to build roads and cut down the forests in order to maintain the GVRD policy for high water quality, that these combined practices are not responsible for increased sedimentation into our reservoirs.

Roads, ditches and culverts are intensively maintained and the GVWD has few fill failures and road washouts. There are ditch sediment traps in a number of locations, most notably along the Capilano Main Line where muddy glacial Lake sediment is intercepted. In our judgment, under present levels of maintenance, watershed roads deliver very small amounts of TGS (Turbidity-Generating Sediment) into the reservoirs. (Thurber Engineering, *Assessment of Turbidity-Generating Sediment Sources and Transport in the Capilano, Seymour and Coquitlam Watersheds*, p.20)

DISREGARDING THE ASSOCIATED FACTS

Aside from the slides themselves, the Morse report oddly neglects to mention any storm related damage to logging roads, road banks, road ditches, plugging of culverts, and the related transport of sediments. There has been virtually no descriptive and documented tabulation of these problems in any of the GVRD public reports from the 1960's onwards. Road banks in steep terrain can cause long term problems, such as progressive slumpage onto roads which cause ditches to be filled and culverts to be plugged with debris, cutting out roads and carrying sediment and debris down these water courses. There is no way to predict when such problems will occur. But one thing is certain. When the landscape is disturbed by road construction, culverting, and clearcut logging, they interfere and alter the hydrological dynamics - the myriad ways water moves and works through the landscape, transporting material and sediments into our reservoirs.

SLIDES THROUGH AND ADJACENT TO LANDS CLEARCUT LOGGED

All of the landslides originated at high elevations within old growth forest areas. Typically these slides and torrents start out as relatively small events, picking up momentum and coarse debris in forested gullies and stream beds as they move downhill. (Morse report, page 2)

The table on page four of this critique lists the slides which came down through, or immediately adjacent to, clearcuts in the watersheds. There is no analysis in the Morse report to account for these particular slides passing through clearcuts, nor is there a definition of what the report refers to as “natural” slides in these locations. The exclusion of mentioning details regarding clearcuts is consistent with the GVRD’s pseudo-scientific accounts of forestry practices in the watersheds, and the manner in which they are not presenting all the evidence to the public.

Road and clearcut dynamics, especially in an intense rain-on-snow event, now play a major role in the interchange, acceleration, and the initialization of landslides and slope failures in our watersheds. These are what the 1990/1991 Thurber report failed to properly stress. These dynamics also contribute significantly to the erosion of the landscape and the dispersement of sediments, thereby increasing or even greatly contributing to otherwise natural turbidity events. However, the Morse report accounts for turbidity from only natural erosion of streambanks as being the “most obvious source”:

Intake turbidity is primarily caused by landslides or erosion of the shoreline or tributary stream banks that carry silt-clay or organic fines into the reservoirs near the intakes. (Morse report, page 2, cites Thurber.)

Once again there is no discussion of the existence of other rather obvious sources.

THE INTERPLAY OF SLIDES ON ROADS

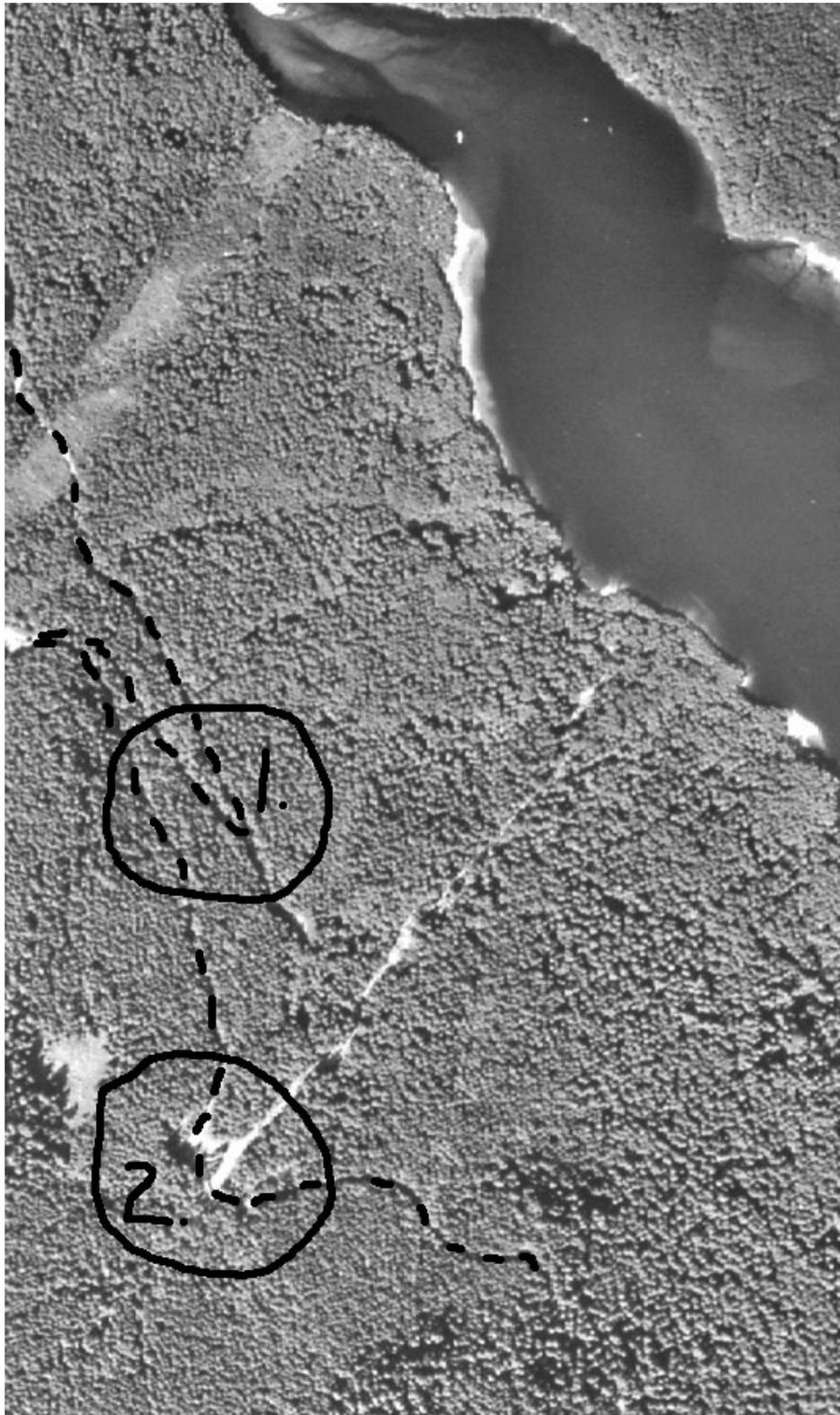
All of the slides included in, the Morse report either continued across or ended on logging roads. This fact has a particular significance not deliberated upon in the report. One has only to imagine the dynamics of water run-off in an intense rain-on-snow event. For instance, if we could have witnessed the slides piled over the logging roads during the storm events, we would have been able to understand other factors involved along the various road locations. Water run-off was rushing wildly down the road ditches. When the moving water hit the debris blocking the ditches, it was either quickly pooled back and then diverted perpendicularly across the road, causing erosive damage to the road surface gravels, and continuing down the slope cutting out a new water course and super-saturating the downslope, or, later, that the force of the waters finally cut through the debris mass itself and carried the debris on down the ditch to its logical end. There are of course more complex considerations in such a condition. For instance, if one or more

culverts had been plugged above, the force and volume of the water in the ditch would be even greater, thereby increasing the force of erosion against the slide and on the road itself. Depending upon slope and location, roads themselves, in this case, are the agents of additional problems to landslides generated either naturally or otherwise from watershed forestry practices.

An example of such a case was recently discovered after the storm events along the Hollyburn road branch, directly above the Capilano reservoir. Contrary to the Morse report, this slide did not originate in high elevation forest (diagrams 1 and 2 on pages 11 and 12). Water had been moving down along a shallow ditch. The water bypassed a damaged, narrow, and now functionless culvert, which should have intercepted some of the storm water's volume. Not much farther down the ditch from this culvert location, a number of long branches had fallen diagonally into the ditch area, slowly trapping forest litter and creating a small dam. The dam then deflected the stream onto the road and rushed down the middle of the road, carving out the fine road gravels (photos 1-2). About one hundred feet down from the diversion point the water spilled over and down the road bank, eventually saturating the slope. This young aged forested slope, which lay above a road immediately below it, eventually collapsed (photos 3-5), and a section about thirty feet wide and one hundred feet long slid across the road directly below (photos 5-6). This slope failure resulted in three more events:

1. The water which had caused the slope failure was continuing to come down from the road over the now exposed slope and was diverted to the downward right hand side of the slide (examine diagram #2), which happened to be the up-slope portion of the road which the slide now lay across.
2. The water which had been traveling down the lower road ditch was blocked by the slide, and this water, joining with the other water just mentioned, flowed across the road, parallel to the slide material, and the combined waters then saturated the slope below this road.
3. This over-saturation of the road bank below the road caused another slope failure (photo 6), roughly the same size as the slide above.

As a result, more taxpayer's maintenance costs are involved to restore the damaged road, to re-stabilize the two slopes, to remove the slide material, to replace and perhaps add another culvert, and more sediment may have accumulated in the Capilano reservoir.



Aerial photograph showing west side forest above Capilano Reservoir, and Hollyburn logging road switchback. Area 1 (in top circle) is the location of Diagrams 1-2, and photos 1-6. Area 2 (bottom circle) is the location of photos 7-11.

CROSS SECTIONAL ANALYSIS (DIAGRAM #1.)

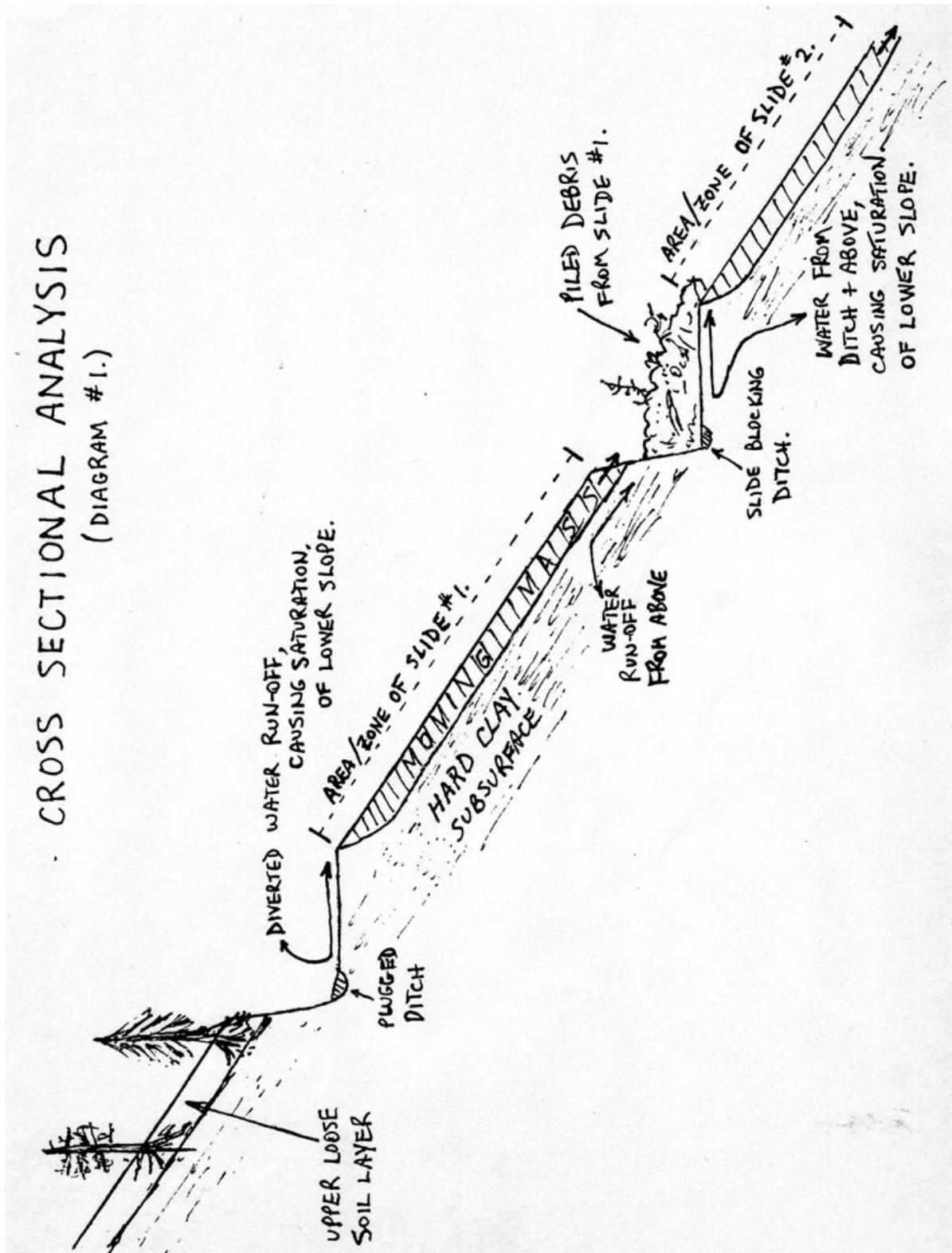




Photo 1 (left). Runoff water diverted onto road due to blockage in ditch. Road grade is about 20 percent.

Photo 2 (below). Shows the path of the diverted water channel on road directly below photo 1, crossing the middle of the road, and then over the downslope where it caused a small landslide.





Photo 3 (left). Directly to left of person standing is the point where the diverted water runoff went down the slope, supersaturating the soil, and causing a small landslide.

Photo 4 (below). Looking down the slope from photo 3. Small landslide has fallen across the lower road in the switchback. Water runoff was diverted in two directions, to left, and down the road, and to right of slide, across the road, and down the slope, causing another small slide.





Photo 5 (above). Shows the upper landslide area from lower road. For scale, note person in upper middle area. Water runoff diverted to right and left of photo, and down road ditch to right.

Photo 6 (left). Slide debris across lower road. Note man in middle of slide for scale. Some of the water runoff which caused this slide came down the slope and was diverted to this side of slide and over the road, combined with ditch runoff immediately to lower left of photo, to cause another slide to lower right of photo. Size of slide similar to slide above it.

WHAT'S THE REAL STORY IN THE CAPILANO?

The Morse report also briefly mentioned turbidity problems specific to the Capilano watershed. A graph (see Appendix, Attachment 3) shows that turbidity in the Capilano was above Canadian guidelines for over a week, beginning on December 19th, after which the GVRD had to shut off the water for a long period;

The significant turbidity event that occurred in the Capilano watershed can be attributed to the glacial lacustrine deposits (clay-silt) that surround the Capilano reservoir. (page 3)

It is of some interest to note that there were no significant slides reported for the Capilano watershed until December 26th, the third rain-on-snow event, when 3 slides occurred. In relation to the other watersheds, with similar slope characteristics, it seems extremely odd that there were no significant slide events for the Capilano, especially during the second storm event (see table on page two). It is unknown and most unlikely that these particular slides in the Capilano were responsible for the continued high turbidity in the Capilano after December 26th. The Morse report vaguely states that the high turbidity after December 19th was “a result of earth movement (emphasis mine) during this storm period”. So where were the origins of this “earth movement”, and what caused it? Good questions. There is no explanation in the report.

The Greater Vancouver Water District has known since the 1920's, and earlier, that the fine clay-silt of the Capilano soils have been a major concern for water quality. The Water District monitored the accelerated erosion of these fine silts because of the extensive clearcutting operations and rail line construction of the Capilano Timber Company. The soils in the affected areas of the Capilano were wounded and weakened, and some areas are still destabilized and eroding even after 70 years because of the Capilano Timber Company. More problems were experienced after the Bridge River Power Co. built a tote road and a hydro right-of-way in the 1930s (the Water District had to chlorinate the Capilano water supply during the Power Co. construction period). After a period of over 30 years of natural recovery, logging and roadbuilding re-continued in the mid-1960's by the GVRD. The important question to ask is: why has the GVRD allowed forestry activity to continue in light of its knowledge of the very fine clay-silts in the Capilano?

An example of the long-term effects from roadbuilding, and the source of recent fine clay turbidity in the Capilano reservoir, can be found directly above the north-west portion of the reservoir itself. At the end of last February, 1994, during another dramatic rain-on-snow event, two u-shaped sections of loose clay soil, both about ten metres wide and about thirty or more metres long by about seven metres deep, slid off the downward portion of the Hollyburn spur road (photos 8-10). The debris which gave way filled a steep main creek gully directly below it, and the rushing waters carried the clay sediments directly into the reservoir (photo 11), causing a productive turbidity event. This problem was never properly addressed nor reported to the Water Committee. Another rather serious section of eroded upper road bank exists directly above and to the

side of this site. A section from a very steep clay bank about fifty metres wide by about 40 metres high also slumped last February 1994. The upper bank slide material oozed across the road and the fine silt was funneled into the same creek channel below. The problem with both steep banks is that materials will continue to erode because of roadbuilding. The lower slope can be repaired, but at great cost. The upper slope may be almost impossible to correct, because of the length and inclination of the bank. It was a bad place to cut a road, and if that road location had been absolutely necessary, a very long bridge ought to have been built to properly protect such a sensitive area. Of course to construct a bridge in this location would have exorbitant costs.



Photo 7 (left). Large top and bottom cutslopes in area 2 (see page 10), the source of fine silt erosion and turbidity.

Photo 8 (below). Reverse angle of photo 7, showing large slope failure below road. Note person in middle of photo for scale. Hurricane Creek is about 100 feet behind person.





Photo 9 (above) and photo 10 (below). Photos looking downslope from road, showing deep erosion of fine silt slope material, on either side of remaining thin, erect island of material where person is standing. Note that the island is supported by tree roots. This island will let loose at any time, as slope is continuing to erode, and has considerably weakened as a support for the road directly above. Hurricane Creek is directly below, where washed silts from slide material, causes turbidity, and is transported directly into Capilano Reservoir.





Photo 11. Looking down Hurricane Creek. Note Capilano Reservoir below. Note eroded banks to bottom left area. All debris washed into creek and down into reservoir. The Water District previously placed rip-rap (rock) on slope to support road and bank to bottom left..

PROBLEMS WITH RESERVOIRS - ESPECIALLY AFTER FORESTRY PRACTICES

All reservoirs have one thing in common - they are slowly losing their storage capacity because of the transportation of materials by water courses, and material slumpage into the reservoir. (An overview of this problem has recently been explained in Marc Reisner's book, *Cadillac Desert*, which details the damming of rivers in the United States.) The rate by which this occurs over time is dependent upon two factors:

1. Natural erosion, through a combination of physical agencies, in an unmanaged drainage basin;
2. Human intervention within the drainage basin.

Human intervention, by cutting through the landscape from roadwork, and disturbing the natural forest cover regime by clearcutting (forest management), will affect and stress the drainage's physical properties and characteristics, and will accelerate and initiate erosional processes. The extent of this depends of course on how, where, and how much is actually "managed".

The rate by which our three reservoirs have been affected are likely different for each. The Capilano, finished in 1954, has been perhaps the most affected: the combination of erosional complications of extensive logging from the Capilano Timber Co. in the lower Capilano watershed from 1918-1932, and the GVRD's continuation of roadwork and logging along the upper valley and into all the higher main tributary valleys. The Seymour reservoir was completed in 1960. Roadbuilding and logging began shortly afterwards beside the reservoir and up the valley. The forested areas feeding the reservoir were never previously logged. The Coquitlam reservoir, the largest of the three, was completed at its present height in 1913. A federal Order-In-Council of 1910 protected the Coquitlam drainage forests from being logged until 1972 when the GVRD started logging in the Cedar Creek area. The Coquitlam has since been roaded through more than half of its general area and has not had the turbidity problems of the other reservoirs. That is because of its greater area and that most of the flow of the Coquitlam is diverted at its lower southwestern point into Bunzten reservoir via a rock tunnel.

Almost all of the debris and sediments are dispersed and deposited where the river enters the reservoir. Over time, depending upon the rate and depth of annual deposits, this area is critical to additional turbidity events as the level of the reservoir fluctuates, as in the Capilano. Depending upon the level of the reservoir, these river mouth deposits are continually being transported further down the reservoir by the river action. A very heavy rain-on-snow or intense rainfall event will not only act to transport more material into the river above the reservoir, but will also combine with other sediments stirred up by the volume and velocity of the river in this mouth channel area - dual source turbidity event.

What is important here is that I believe our reservoirs are being filled more quickly by forestry practices and are the source of additional and long-term turbidity events. There are proposals to install very expensive filtration plants to now combat these new problems, problems which should have been, and once were, prevented. E.A. Cleveland, who once presided as Commissioner of the Water District from 1926 - 1952, and who enforced a policy of no roadwork and no commercial logging, had this to say in 1936:

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.

WHAT ARE THE REAL COSTS?

The cleanup tab for the slide debris off the logging roads is estimated to cost us \$80,000 in the Morse report. It would be interesting to discover how much monies are annually charged to road maintenance in all of the watersheds, and for what specific purposes. Of course there have been more heavy rains since the slides were reported, and we haven't had an update for possible additional costs. And then there are the areas described in this critique concerning the area above the western Capilano reservoir which needs to be accounted for. All in all, roads are a long term expense item: for debris clean up; for road bank degradation; as distributors of sediments; and on water quality issues discussed above.

Another possible cost factor has been suggested in the March Water Committee Agenda for 1995. One of the options before the Water Committee, being a further review of the slides from last December, is to hire another geotechnical consultant to advise us for some \$50,000 to \$70,000. Hire another consultant to tell us what the GVRD wants us to know again?

So, who pays for all of this? Theoretically, these costs were to come from perpetual profits of cutting the old growth forests and future forested stands on a sustained yield basis. That was the rationale for the watersheds' Tree Farming program. The GVRD is now in a plight, because if the funding component to maintain roads, and everything else in the GVRD which depends upon this revenue source, is cut off, specifically because of growing public awareness and resentment, then where will the financing come from? The GVRD is now caught in a vicious circle, a circumstance which they ought to have foreseen. So has the rationale for logging actually been one of concern for water quality, or has it become a complicated mess?

One of prudent formulas for such a situation is to begin rehabilitation of the watersheds by slowly and very carefully putting roads to bed. Such processes are currently being undertaken in different areas of B.C. and in some areas in the United States. For instance/ such a program has begun in Seattle's Cedar River watershed, where they have an incredible road network of hundreds of miles. These programs are not cheap, but they offer very practical and prudent foresight.

THE COOITLAM PIPELINE LESSON

In 1989 the GVRD Administration Board were unanimously opposed (all but two mayors later on) to the proposal for a natural gas pipeline through the Coquitlam watershed. This unified opposition by the GVRD caused the provincial government to legislate a Commission, and appointed a former Manager of the GVRD, Doug MacKay, as Commissioner. During the enquiry, counsel for the government and the gas company questioned the GVRD witnesses repeatedly about their concerns and objections. John Morse's position, on behalf of the GVRD, was that an alternate route should be chosen, because road construction for the installation of the pipeline would cause adverse effects

to water quality, so much so, that the Coquitlam source might have to be shut off during the long period of pipeline construction. John Blatherwick, Chief GVRD Medical Health Officer, was also opposed and testified before the Commission. At that time, 1989, the upper Coquitlam road, which now connects with a pass into the Indian River drainage, was only a pipe dream.

The reason why the Commission finally approved the pipeline through the Coquitlam, aside from purely minor economic advantages over the Indian Arm route, was that the GVRD had failed to convince the Commission of being consistent with its objections. Because the GVRD had so many roads already constructed, and because of the sustained yield clearcutting in the watersheds, their objections were self-contradictory, inconsistent with what the GVRD had been practicing. The GVRD should have argued on the dangers associated with highly compressed natural gas pipelines, their extremely volatile nature. What if there was an explosion in the Coquitlam and the forest caught fire!! The GVRD should have gone to court, but they stopped short. They were caught in their own web, and couldn't pull out of a nose dive. So what's next on the development horizon in our watersheds because of what has happened by forestry development?

It is fair comment to say here, in relation to the pipeline inquiry, that there is an inconsistency in the GVRD's statements about providing high quality water with its network of roads and myriad clearcuts.

ANOTHER TOUR FOR THE WATER COMMITTEE (BUT NOT FOR ANYONE ELSE)

Members of the Water Committee asked for a tour of the watersheds to inspect the landslide sites on February 10th. It has taken until yet another Water Committee meeting, March 10, 1995, before options to view the sites have been given by John Morse. The only option to view the sites are by helicopter, along with GVRD staff and their geotechnical consultants. That is an option, but so is inspecting the sites on the ground, which has not been offered.

At the last Water Committee meeting, there were also requests from a few members of the public to view the sites. These requests have been categorically denied. The author of this critique had requested a site inspection in advance of the February meeting, in accordance with his continuing research on the watersheds, and has been repeatedly stalled and denied access. The question is, do the GVRD have something to hide? What is the problem? Why are they stalling? Why have they waited for over two months after the fact to not show anyone these areas. After all, these are lands which the taxpayers of Greater Vancouver have entrusted certain GVRD staff to watch over. Is there a case to make here over the policy of restricting public access as being abused by stonewalling legitimate concerns over lands which the public has a fundamental right to know everything about?

Perhaps what is in order is for a legitimate and authorized group of citizens to have access to the watersheds who would be entrusted to relay any and all information to any of the public who should request it. That is perhaps the missing and necessary component to this dilemma, and would restore a enormous vote of confidence in the public.



Photos showing logging road on south side of Eastcap Creek, Capilano Watershed. This logging road, built through ancient forests, and over-top of the old Eastcap Water District trail, has exposed a number of steep cutslope materials. Not person in bottom photo, to left, for scale.



Another large cutslope at upper end of Eastcap logging road, next to Cypress Creek. Note person in upper photo, on logging road, for scale. These sediments are routinely washed into the Capilano River during heavy rainstorms. Photo below shows same area, but from another angle across Cypress Creek bridge.



LAST THOUGHTS

I sat in on a lecture given by John Morse at the Maritime Centre near the Planetarium just over a year ago. The lecture, on the history of the Water District, was accompanied by slides, with some shots of the watersheds. The slides were carefully chosen so as not to show any clearcut images in the watershed forests. In the same way he carefully skirted around not detailing important reasons behind the formation of the Water District in 1926 - to stop logging in the watersheds. Ernest Cleveland, former Water Rights Comptroller and later the first Water District Commissioner, was also opposed to logging in the watersheds. In fact he had written a one hundred page report in 1922 with very strong language in this regard.

The lecture focused more on the history of the water works system. There was brief mention to a 1913 report by H.M. Burwell. Burwell was a highly regarded engineer, and had completed many waterworks contracts for the Water District during those early years. In fact he had also surveyed the site for the Coquitlam tunnel to Buntzen Lake and helped engineer the dam at Buntzen reservoir. In the 1920's the Water District named a mountain and lake after him, the latter being one of the two high elevation holding reservoirs in the Seymour. In 1927, J.S. Umbach, Surveyor General in Victoria, provided a biographical sketch of Burwell, in which he said:

Mr. Burwell was Engineer of Vancouver Waterworks for many years and the watershed of the Capilano and Seymour were his especial pride.

Prior to becoming Engineer to the Waterworks, Mr. Burwell surveyed many of the original preemption claims in the lower parts of both the Seymour and the Capilano River.

Mr. Burwell was a great lover of the outdoors and was an authority on fishing on the streams and lakes of British Columbia.

He was loved by his intimate friends and associates and in his profession his enthusiasm, his good judgment and his integrity endeared him to his brother engineers.

Morse alluded to information in Burwell's 1913 report which mentioned some problems from November storms contributing to the deposition of debris and sediment into the Capilano River. I thought this quite interesting, that he would conveniently pick out information to support the view which also dominates his report to the Water Committee. Morse perhaps forgot to mention that Burwell was adamantly opposed to logging in the watersheds. In fact I had specifically mentioned details about this in my second draft manuscript, *Wake Up Vancouver* (pages 12-13).

In 1917, Burwell had lobbied the Mayor and Council of Vancouver City to stop intended logging in the Capilano by the Capilano Timber Co. He provided six long newspaper articles for their inspection, and in a cover letter he wrote:

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.

Here are a few snippets from these articles:

Another feature in connection with logging is the numerous openings and channels that are gauged out along the mountain sides, no matter what method of logging is adopted. These openings and grooves afterwards become permanent water-courses and will cause a much more rapid run-off than formerly, which will be very injurious to the water supply. In other words, much greater floods will occur during the autumn and winter months, and a lower minimum flow will be the result during the dry summer season.

Another thing that we all should know, and that is: That the conservation and purity of this water supply is of vastly greater importance to the inhabitants of the district, than the dollars which the merchantable timber from this area would represent to the community. Why take any chances with our splendid water supply, which is ours in equity and by the right of possession.

1. Forests reduce the temperature of the air and soil to a moderate extent, and render the climate more equable;
2. They increase the relative humidity of the air and reduce evaporation;
3. They tend to increase precipitation and moisture. As regards the actual rainfall, their effect in low lands is nil or very small; in hilly countries it is probably greater, but definite results have not yet been obtained owing to the difficulty of separating the effect of forests from that of other factors;
4. They help to regulate the water supply to produce a more sustained feeding of springs, tend to reduce violent floods, and render the flow of water in rivers more continuous;
5. They assist in preventing denudation, erosion, landslides, avalanches, the silting up of rivers and low lands and the formation of sand dunes;
6. They reduce the velocity of air-currents, protect adjoining fields against cold or dry winds, and afford shelter to cattle, game, and useful birds;
7. They may, under certain conditions, improve the healthiness of a country and help in its defence;
8. They increase the beauty of a country, and produce a healthy aesthetic influence upon the people.

Surely the people of this district will never allow their watershed to be logged off, if they will only consider what such work would really mean to our water supply. The facts are as clear as “Capilano”, and if the public will give this matter the attention it deserves, the final decision must be: Hands off the forests that help to provide us with a water supply - - a supply that we have naturally taken possession of as our birthright.

Judge the quality, insight, and passion of these statements. What do we know about the real history and concerns from concerned citizens in the Greater Vancouver area over our watersheds? Certainly Burwell was not alone in his vision. He was a qualified engineer, a man who loved the outdoors, understood the operating principles of forests and hydrology, and fought to keep our watersheds from being logged. He kept up this fight until he died in 1925. I guess there are engineers who really understand and care, and those who don't.

The March Water Committee Agenda report from John Morse has provided historical information on natural slide and turbidity events. This information was taken from the minutes of the Water Committee from 1926 to 1963. The information is purely anecdotal, and doesn't provide the reader with understanding the relationships which roads and logging have on our watersheds. The excerpts are provided to try to make the reader only believe in the turbidity contributions from natural occurrences. Oddly, there is no mention of the effects which the Capilano Timber Co. had in the Capilano watershed to the later “natural” occurrences, turbidity, etc., in the Capilano.

THE MORSE REPORT AND DATA

Item No. 2 (D)

B. L. MARK
COMMISSIONER

Greater Vancouver Water District

ESTABLISHED 1924

ITEM 2 (D)

TO: Water Committee
FROM: Manager, Water Engineering and Construction
DATE: February 10, 1995
RE: GVWD Watershed Rain on Snow and Landslide Events - December 1994

4330 KINGSWAY
BURNABY, B.C.
CANADA V5H 4G8
PHONE (604) 432-6200
FAX (604) 432-6251

1. Purpose

The purpose of this report is to provide the Water Committee with information on the December, 1994 intensive precipitation events and the resulting landslides and water quality impacts within the Capilano, Seymour and Coquitlam watersheds.

2. Background

During the end of November and throughout December, 1994 three major storm events occurred within the GVWD watersheds. The unusually heavy snow accumulations in November combined with warm temperatures and the subsequent intense December rain storms caused 22 significant snow avalanches and debris torrents.

Similar seasonal events have occurred in the past and have been described in Consultants reports as natural events as follows:

Rain-induced landslides involving torrents and floods of coarse (gravel, boulders and logs) and fine (silt, sand and organic fines) debris are natural and relatively frequent phenomena in the mountains of British Columbia, of which the watersheds form part. - Geotechnical Assessment of 1990-1991 Landslide Events in the Greater Vancouver Water District Watersheds, Thurber Engineering.

3. Policy

The following Administration Board resolution is applicable to the subject matter of this report:

THAT the protection and enhancement of a quality water supply be the guiding principle in the management of the watershed.

4. Discussion

The dates of the rain-on-snow storms, average accumulated rainfall and snow melt, and the number of landslides that occurred are as follows:

1. November 29 to 30, 1994 - 71 mm (2.8 inches) - 12 landslides
2. December 16 to 21, 1994 - 329 mm (4.3 inches) - 6 landslides
3. December 26 to 28, 1994 - 117 mm (3.1 inches) - 4 landslides

The above information is presented in detail on the December 1994 Storm Events graph (Attachment 2).

Of the 22 landslides which occurred 3 were in the Capilano watershed, 8 in the Seymour watershed and 11 in the Coquitlam watershed. Most of the landslides were very small ($< 1,000 \text{ m}^3$ of debris) with the 4 largest slides being greater than $3,000 \text{ m}^3$. The total volume of debris activated by the landslides is estimated to be about $24,750 \text{ m}^3$. This information is detailed in the Landslide Table (Attachment 1) and illustrated on the attached location map (Attachment 4) and photographs (Attachment 5).

All of the landslides originated at high elevations within old growth forest areas. Typically these slides and torrents start out as relatively small events, picking up momentum and coarse debris in forested gullies and stream beds as they move downhill. One of the slides occurred off drainage within the Seymour Demonstration Forest.

The majority of landslide debris ($17,150 \text{ m}^3$) was intercepted by existing road systems within the watersheds. The remaining debris ($7,600 \text{ m}^3$) was either dispersed over creek fan areas or reached main reservoir tributaries.

Of the three GVWD watersheds, only Capilano exceeded the Canadian Drinking Water Quality turbidity guidelines of 5 NTU (Nephelometric Turbidity Unit) as a result of earth movement during this storm period. The Capilano Reservoir exceeded 5 NTU's for ten days from December 20 to 29 as shown on Attachment 3.

Storm events coinciding with low water levels in the reservoirs in the fall have historically produced turbid water conditions. At the time of the December 1994 storm events, the three GVWD reservoirs were near full capacity with minimal drawdown zone exposure, thereby reducing the erosion opportunities from this source of turbidity generating sediment. The other sources of turbidity generating sediment are landslides and stream bank erosion. The attached photographs indicate the relatively high stream flows during the December storm events with typical river levels shown for comparison purposes. The December 1994 landslides principally consisted of coarse materials and did not contribute to the turbidity level in the reservoir. The most obvious source of turbidity generating sediment is the erosion of stream banks as documented by Thurber Engineering (1991 - *Geotechnical Assessment of 1990-1991 Landslide Events in GVWD Watersheds*). Their hypothesis states:

Landslides which involve coarse debris and occur in the upper reaches of the three watersheds have no effect on turbidity at the reservoir intakes. Intake turbidity is primarily caused by landslides or erosion of the shoreline or tributary stream banks that carry silt-clay or organic fines into the reservoirs near the intakes.

ITEM 2 (D) - GVWD Watershed Rain on Snow and Landslide Events - December 1994
Water Committee Meeting - February 10, 1995

The significant turbidity event that occurred in the Capilano watershed can be attributed to the glacial lacustrine deposits (clay-silt) that surround the Capilano reservoir. The attached photographs (Attachment 5) illustrate the high stream flows during the storm events.

5. Options

Not applicable.

6. Financial Impact

During the end of 1994 partial clean up and end hauling of slide debris utilized 1994 Water District Operational Budget funding. The remaining clean up and restoration work will be done, when access permits given existing snow levels, using 1995 Water District Operational Budget funds. Total expenditure to carry out the cleanup and restoration work is estimated at approximately \$80,000.

7. Livable Region Strategic Plan Implications

Not applicable.

8. Member Municipalities

Not applicable.

9. Intergovernmental

Approvals for some of the remedial work will have to be made to the Ministry of Forests in accordance with provincial regulations.

10. Communications/Education

A press release was issued on December 20, 1994, notifying the public of the turbidity event in the Capilano watershed arising from the high river flows.

11. Staff Recommendations

THAT it be recommended to the Administration Board that the report titled *GVWD Watershed Rain on Snow and Landslide Events - December 1994*, dated February 10, 1995, and attachments be received for information.

12. Water Committee Comments

ITEM 2 (D) - GVWD Watershed Rain on Snow and Landslide Events - December 1994
Water Committee Meeting - February 10, 1995

13. Water Committee Recommendations

14. Board Decisions

Attachment(s)

1. December 1994 Landslide Table
2. December 1994 Storm Events Graph
3. December 1994 Turbidity Readings Graph
4. Location Map
5. Photographs

(RAIN&SL.DOC)

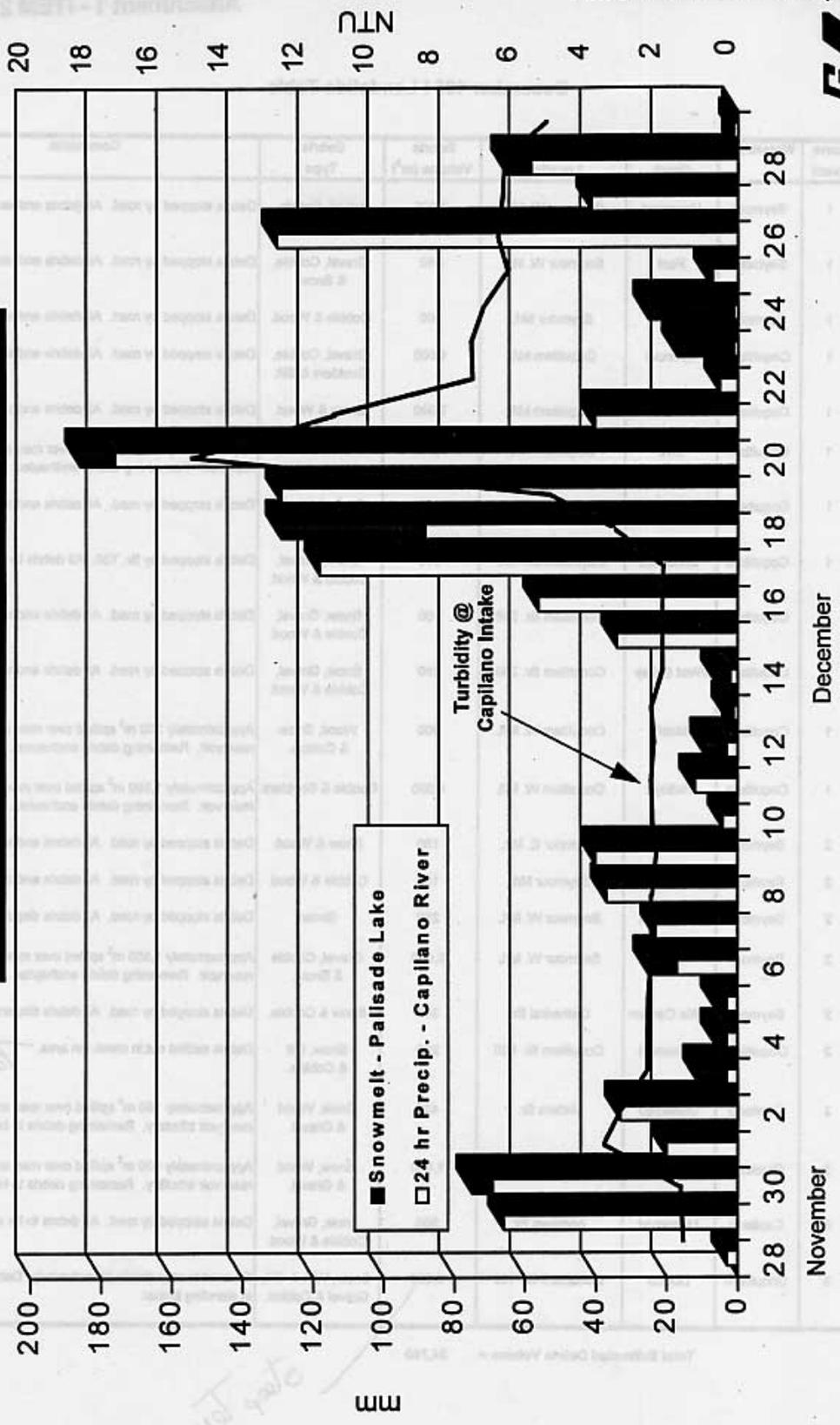
Attachment 1 - ITEM 2 (D)

December 1994 Landslide Table

Slide	Storm Event	Watershed	Affected Creek	Road Location	Debris Volume (m ³)	Debris Type	Comments
1	1	Seymour	Unnamed	Seymour W. M/L	2,000	Gravel, Cobble, Silt & Snow.	Debris stopped by road. All debris endhauled.
2	1	Seymour	Pool	Seymour W. M/L	450	Gravel, Cobble, & Snow.	Debris stopped by road. All debris endhauled.
3	1	Seymour	Cabin	Seymour M/L	100	Cobble & Wood.	Debris stopped by road. All debris endhauled.
4	1	Coquitlam	Spencer	Coquitlam M/L	1,500	Gravel, Cobble, Boulders & Silt.	Debris stopped by road. All debris endhauled.
5	1	Coquitlam	Proto	Coquitlam M/L	1,000	Snow & Wood.	Debris stopped by road. All debris endhauled.
6	1	Coquitlam	Jive	Coquitlam M/L	5,000	Snow, Gravel, Cobble & Silt.	Approximately 500 m ³ spilled over road and into the reservoir. Remaining debris endhauled.
7	1	Coquitlam	Unnamed	Coquitlam M/L	150	Snow & Wood.	Debris stopped by road. All debris endhauled.
8	1	Coquitlam	Unnamed	Coquitlam Br. 130 & 131	800	Snow, Gravel, Cobble & Wood.	Debris stopped by Br. 130. All debris to be endhauled
9	1	Coquitlam	East Bailey	Coquitlam Br. 230	100	Snow, Gravel, Cobble & Wood.	Debris stopped by road. All debris endhauled.
10	1	Coquitlam	West Bailey	Coquitlam Br. 230	150	Snow, Gravel, Cobble & Wood.	Debris stopped by road. All debris endhauled.
11	1	Coquitlam	Maple	Coquitlam W. M/L	500	Wood, Snow & Cobble.	Approximately 200 m ³ spilled over road and into the reservoir. Remaining debris endhauled.
12	1	Coquitlam	Helloya	Coquitlam W. M/L	4,000	Cobble & Boulders.	Approximately 1,500 m ³ spilled over road and into the reservoir. Remaining debris endhauled.
13	2	Seymour	Unnamed	Seymour E. M/L	150	Snow & Wood.	Debris stopped by road. All debris endhauled.
14	2	Seymour	Cabin	Seymour M/L	150	Cobble & Wood.	Debris stopped by road. All debris endhauled.
15	2	Seymour	Unnamed	Seymour W. M/L	250	Snow.	Debris stopped by road. All debris dispersed on site.
16	2	Seymour	Pool	Seymour W. M/L	3,000	Gravel, Cobble & Snow.	Approximately 1,500 m ³ spilled over road and into the reservoir. Remaining debris endhauled.
17	2	Seymour	Little Canyon	Cathedral Br.	300	Snow & Cobble.	Debris stopped by road. All debris dispersed on site.
18	2	Coquitlam	Unnamed	Coquitlam Br. 520	250	Snow, Silt & Cobble.	Debris settled out in creek fan area.
19	3	Capilano	Unnamed	Sisters Br.	400	Snow, Wood & Gravel.	Approximately 150 m ³ spilled over road and into a main reservoir tributary. Remaining debris to be endhauled.
20	3	Capilano	Unnamed	Sisters Br.	1,000	Snow, Wood & Gravel.	Approximately 500 m ³ spilled over road and into a main reservoir tributary. Remaining debris to be endhauled.
21	3	Capilano	Unnamed	Andrews Br.	500	Snow, Gravel, Cobble & Wood.	Debris stopped by road. All debris to be endhauled.
22	3	Coquitlam	Doozer	Coquitlam Br. 130	3,000	Snow, Wood, Silt, Gravel & Cobble.	No road to stop debris (deactivated). Debris settled out in standing timber.

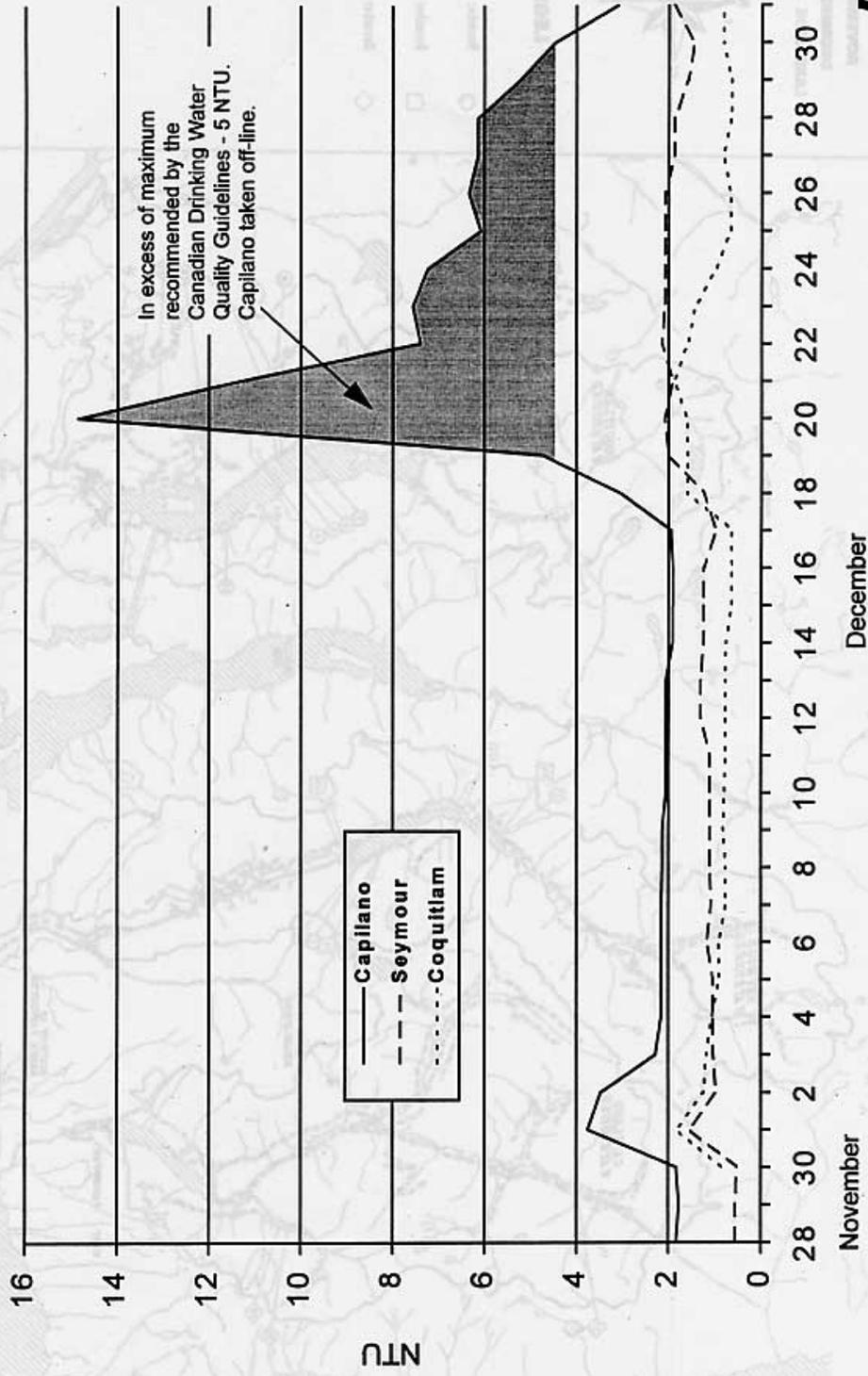
Total Estimated Debris Volume = 24,750

**December, 1994 Storm Events
Capilano Precipitation & Turbidity**



Greater Vancouver Regional District

December, 1994 Watershed Turbidity Readings



Greater Vancouver Regional District

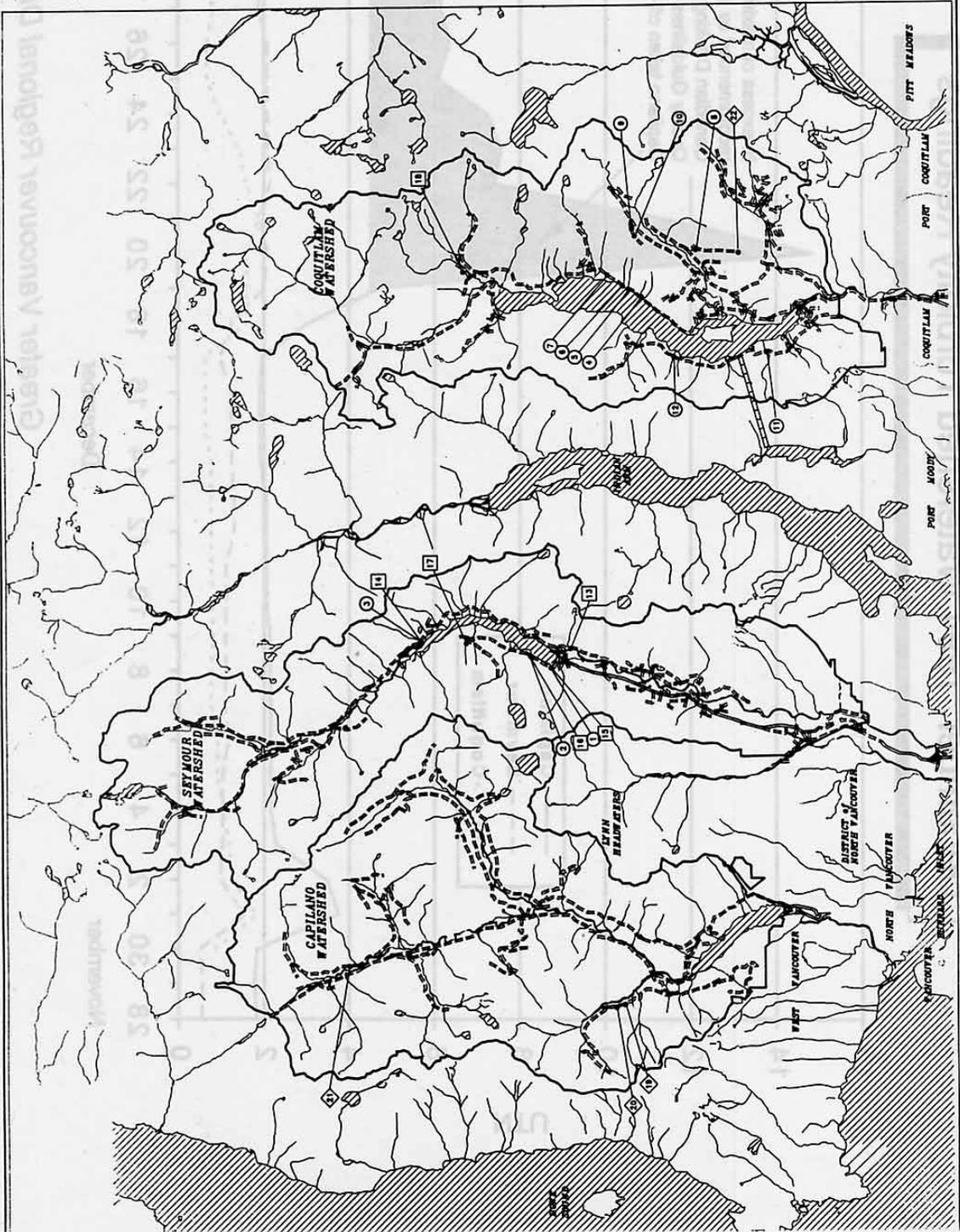
**GVWD WATERSHED MANAGEMENT
NOVEMBER and
DECEMBER 1994
LANDSLIDE LOCATIONS**



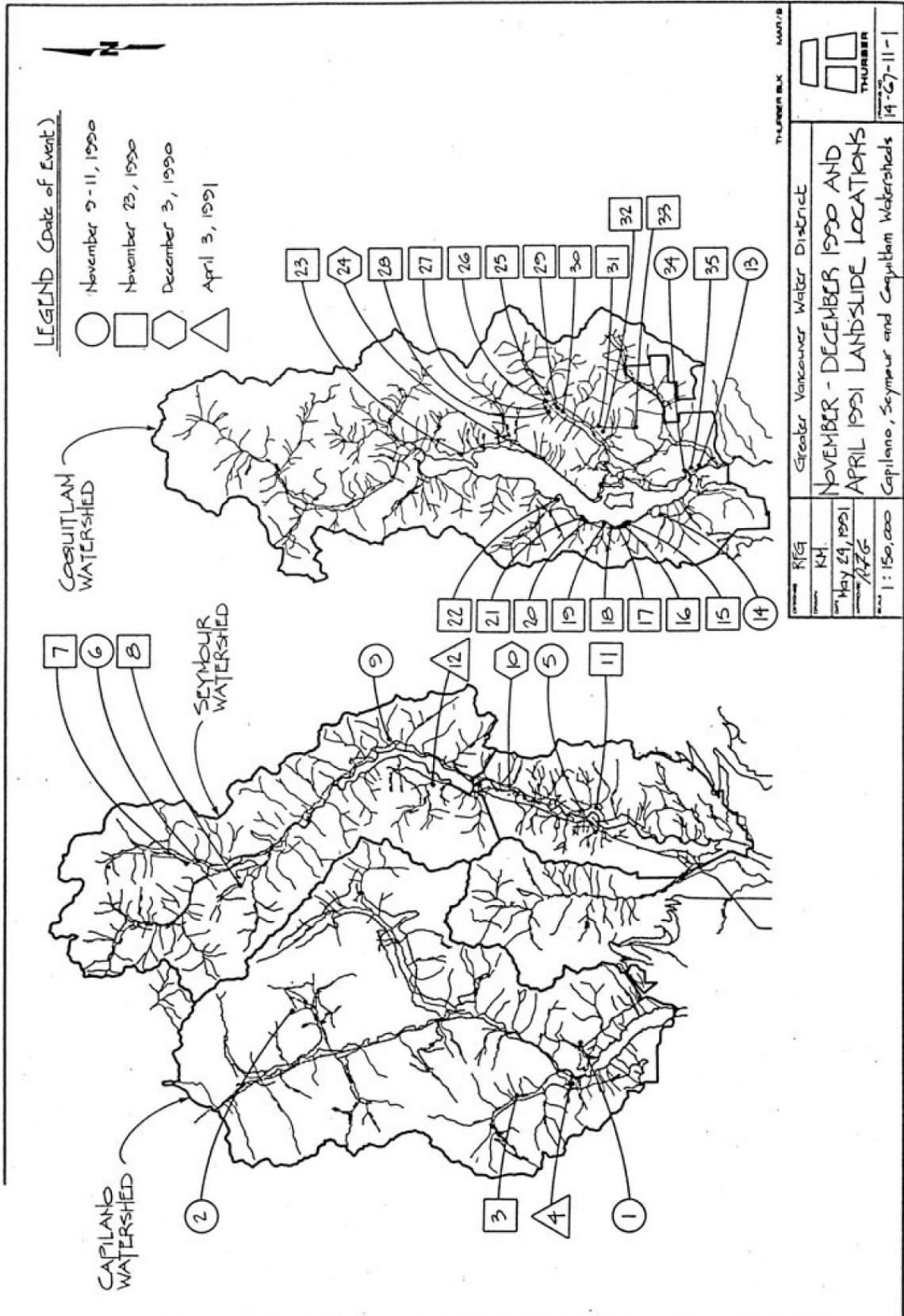
LEGEND

- November 25-30, 1994
- December 16-21, 1994
- ◇ December 26-28, 1994

Attachment 4 - ITEM 2 (D)



1990/1991 THURBER LANDSLIDE MAP



THURBER BLK	MAP 7/9
Greater Vancouver Water District	
NOVEMBER - DECEMBER 1990 AND	
APRIL 1991 LANDSLIDE LOCATIONS	
Capilano, Seymour and Coquitlam Watersheds	
Scale	1:150,000
Date	May 29, 1991
Author	RWG
Project	KM

WEDNESDAY
February 22, 1995

BAN LIFTED
News application over-
turns publication ban in
sex assault case *page 8*
north vancouver

north shore news

Weather

Thursday: periods of rain,
High 11°C, low 3°C.



GVWD landslide report disputed

inside the news

Drinking water quality, logging debate rekindled

A VANCOUVER man who is currently writing a history of Vancouver watersheds has charged that a recent Greater Vancouver Water District (GVWD) report on Lower Mainland water quality and landslides ignores the impact of logging activity in promoting landslides and silty drinking water.

By Ian Noble
News Reporter

But GVWD manager of water engineering and construction John Morse said in his Feb. 10 report that all 22 slides studied in the Capilano, Coquitlam and Seymour watersheds between late November and late December of last year began in areas of old-growth timber.

The water district stated that December 1994 landslides laden with coarse material did not contribute to reservoir water turbidity levels, although debris from the three largest slides ended up in reservoirs.

The Capilano reservoir closed for 10 days in December because it exceeded Canadian Drinking Water Quality turbidity guidelines.

Watershed historian Will Koop, who wants to see an end to old-growth logging in the watersheds, said road-building removes a support system "like removing a beam in a house" and depending on gradation, soil type and the amount of precipitation, can cause debris to give way.

Clearcuts also encourage slides, he said, but neither of those factors are associated with slides in the recent GVWD report.

Koop said 300 kilometres (187 miles) of logging roads criss-cross the Capilano, Seymour and Coquitlam watersheds along with hundreds of clear-cuts on steep terrain.

"They're not giving us all the information," he said, adding that scientific data exists that contradicts what the water district tells the public.

"I think they are avoiding alarming the public," Koop said. "It's ostrich tactics."

But Morse denied that a connection exists in the slides he studied.

He said they all began in old-growth areas at high elevations. He said the common trigger for all the slides was rapidly rising freezing levels and rainfall.

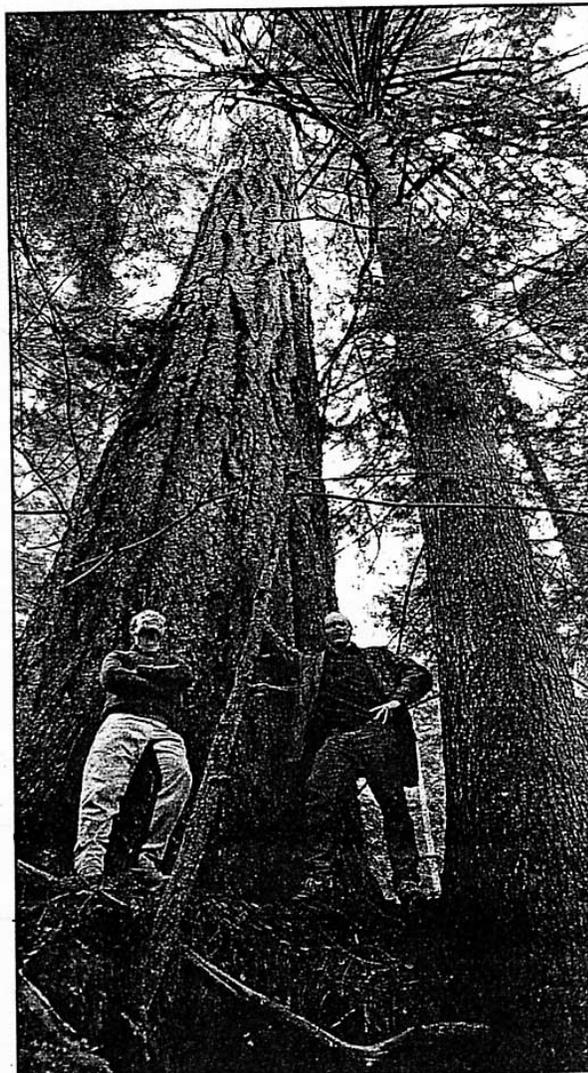
Koop, he added, is "looking for an issue that really isn't there."

He said the purpose of the report was simply to provide information on why the Capilano reservoir was closed and to help new water district directors understand the dynamics of the watersheds. To do so, they were provided with 1990-91 water district reports written by Thurber Engineering, because those reports detailed similar events, said Morse.

He said water quality is the water district's ultimate goal.

Meanwhile, University of British Columbia associate forestry professor Michael Feller said Thurber, the engineering company cited twice in

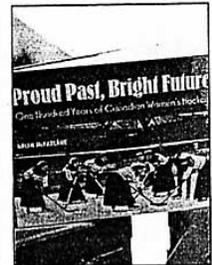
See Logging page 3



NEWS photo Ian Noble

WATERSHED HISTORIAN Will Koop disputes a water district report that does not link logging to landslides, while Ralf Kelman tries to preserve big trees in watersheds, such as this Capilano giant. Kelman plans to pass out pamphlets at the Seymour Demonstration Forest on Saturday.

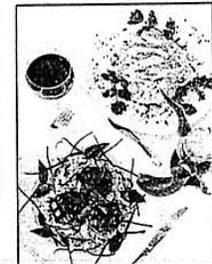
- Business.....29
- Classifieds.....36
- Crossword.....41
- Earthquake.....32
- Fashion.....23
- Inside Stories.....17
- N. Shore Alert.....12
- Sports.....14
- TV Listings.....24



Proud Past, Bright Future
One Hundred Years of Canadian Women's Hockey

arts

- One Hundred Years of Women's Hockey: 17
- Around Town lists upcoming events: 18



food

- Chesa hosts Nüddli spectacular: 27
- La Toque Blanche's Austrian week: 20

COMING FRIDAY

Mercury Mystique:
Ford thinks global with
World 2000 program.

Lower Lonsdale pub approved

Great Greek gets OK after three-month hearing

PERSEVERANCE TRULY does pay as far as Nick Vavaris is concerned.

After literally years of trying, Vavaris finally got North Vancouver City Council's approval for a plan to rezone his 107 West Esplanade restaurant to a pub. His efforts culminated in a grueling three-part public hearing spanning a three-month period.

Although the rezoning proposal received its third reading, its final approval now hinges on the results of another related proposal to designate the building that houses the Great Greek restaurant a heritage site.

The heritage designation proposal will also have to undergo a public hearing process.

Amidst congratulatory handshakes from supporters, Vavaris said he was pleased with the result, but also acknowledged that the process is far from over and that the pub would not be up and running for at least five months.

He also referred to the past concerns of other local pub owners as "nonsense."

"They don't want to share the pie," he said.

During Monday's final phase of the public hearing process, council again heard submissions from members of the public speaking both for and against the proposal.

However, during Monday's hearing speakers against the proposal not

NORTH VANCOUVER CITY COUNCIL

By Robert Galster

only outnumbered those in favor, but also outperformed them.

Leading the charge was Ascher Smith, chairman of disposal giant Smithrite Management Ltd., who said he flew in from his California home specifically to attend the hearing.

His presentation included a song to liven the councillors' hears.

He said the councillors were a little too glum for his liking before telling them that the chief reason he was before them was his concern for properties he owns in the Lower Lonsdale area.

"I disagree with another pub being within 50 feet of one of my outlets," said Smith, adding that it would lead to increased parking and litter headaches. "And I know filth."

On a serious note, Lower Lonsdale-area Joseph Coreia prepared a map of the North Shore on which he placed red dots representing liquor outlets.

The visual impact of the map was clear, with the Lower Lonsdale area appearing splashed with red.

"To add another pub would be absolutely ridiculous," he said.

Graeme Bowbrick, also a local resident who spoke at an earlier hearing, supported the pub application

and was not impressed by Coreia's work.

"It provides for a wonderful visual," said Bowbrick, but he added that it represented an "exercise in intellectual dishonesty."

"Of course you're going to find more pubs in Lower Lonsdale, but that's because there are more people there."

The rezoning proposal passed second and third reading in a 4-2 vote. Councillors Barbara Perrault and John Braithwaite both opposed the proposal.

"I wanted people to really discuss the main issue — is it good planning?" mused Braithwaite referring to the many speakers who focused on praising Vavaris' character rather than the actual benefits of another pub.

Coun. Darrell Mussatto introduced his comments by referring to the "youth" platform he used during the last election.

"I've aged about 10 years in that year," said Mussatto. He called the decision before council "tough" but added that his faith in various security measures currently in place in the city swayed him to favor the application's approval.

"I truly believe that the police can have a handle on problems if there are any."

Coun. Barbara Sharp echoed Mussatto, saying that "decisions like this don't come easy. We've listened and we've listened and we've listened."



NEWS photo Cindy Goodman

STUDENTS FROM Sutherland secondary school's special needs class descend on a duo of L.A. Kings during the NHL team's practice at the Pacific Coliseum on Monday morning. The students were special guests of the Kings at the practice during the California team's visit to Vancouver. On Monday night, the Kings were thumped 8-2 by the Canucks.

Logging, landslide link argued

From page 1

Morse's recent report, provided "superficial" reports.

Feller said that in areas prone to slides, clear-cuts increase instability. "That's been proven time and time again and that's been proven in Vancouver's watersheds," he added.

But he said he could not comment on the 22 slides studied recently by the water district because he had not been at the slide sites.

Although the water district continues to maintain that soil erosion is natural and not due to logging in the watersheds, the GVWD has not demonstrated that clearcuts have not increased erosion and landslides, Feller said.

He said landslides increase turbidity in streams, but data on that theory is inconclusive.

Thurber Engineering's Dave Smith rejected Feller's charges.

"We believe we are thorough and objective," he said, adding reports were as complete as they needed to be "in order to draw the conclusions we drew."

He added that the firm's research shows that neither clearcuts nor road building led to landslides in the watersheds.

Morse said the district only looked at slides that affected roads in the Feb. 10 report. The GVWD spent \$80,000 cleaning debris from the landslides off the watersheds' logging roads.

Watershed giants targeted

Man fights to save trees

MOTIVATED BY outrage that Vancouver's great trees are being ignored by the Greater Vancouver Regional District (GVRD) and worry that they may fall to the logger's chainsaw, Ralf Kelman searches for behemoths in Lower Mainland watershed areas to let the public know big trees stand close to home.

By Ian Noble

News Reporter



NEWS photo Ian Noble

RALF KELMAN'S tree-finding forays have taken him to stands well away from logging roads in the Capilano watershed.

Not one to let the fences surrounding the restricted watershed areas stop him, Kelman travels the densely forested watersheds seeking big trees — firs, cedars, spruce and yews.

Kelman noted there is a lot to find back there. "We're talking about the big time," he added.

"We're talking about the best." In the Crown Creek area of the Capilano watershed stands Canada's second-largest Douglas fir, Kelman said. Although not record height (a mere 71 metres, or about 237 feet), the giant has a 3.3-metre (11-foot) diameter and a 10.5-metre (35-foot) circumference.

A Douglas fir more than 90 metres (300 feet) high in the Coquitlam Watershed may be the country's tallest tree, Kelman said.

A cedar Kelman found above a logging road

had a circumference of 15 metres (50 feet). Although cedars in the watersheds are not record height, big cedars are scattered throughout the watersheds, Kelman said.

Giant yews, he said, live on the west side of the Capilano watershed.

Kelman said he believes many more giants lurk in the watersheds, and they should be found and measured.

Measuring tree size is not easy, said Kelman, but based on a combination of height, diameter and crown spread, it can be done.

Kelman believes and hopes the public will demand stricter logging regulations if they realize large trees remain in local forests.

He said local watersheds provide a unique opportunity to see B.C.'s "tree heritage" close to

home. He wants the GVRD to allow more people to see them.

John Morse, the water district's manager of water engineering and construction, said 3,500 people toured the Capilano watershed from May to September in 1994.

The same tours will be offered next year but access will not be expanded, he said.

Kelman started his tree-searching career by looking for big stumps and studying "stump-scapes."

"I was totally into stumps," he said.

However, his focus changed from stumps to trees when he was hiking in the Lynn Headwaters area and spotted a giant fir. Five minutes of bushwhacking brought him to the base of the 2.1-metre (seven-foot) diameter giant that had been left untouched by loggers.

From that beginning, a determined tree-spotter was born.

"It's a sport in a way with a social twist to it," he said.

Kelman now compiles maps of the locations of massive trees and has begun a "great tree inventory" of 1,000-year-old trees to mark the upcoming turn of the century.

Kelman said he does not take breaking the law by entering restricted areas lightly. But he added the GVRD's policy left him with no choice; he said he was not even allowed to join a media tour of the area.

He said he may have to step on a few GVRD toes to find, map and try to save the trees.

newslines	WHO TO CALL: News Editor Michael Becker 985-2131 (114)	LETTERS TO THE EDITOR Mail to: 1139 Lonsdale Avenue, North Vancouver, B.C. V7M 2H4 Letters (by mail, fax or computer) must include your name, full address and telephone number.	VOICE MAIL 980-1970 FAX 985-2104	COMPUTER BBS 980-8027 FirstClass Bulletin Board User ID: mailbox Password: letters Instructions in News conference.	newslines
	YOUR CALL: 980-1970	THIS WEEK'S QUESTION: Would you accept a tax hike to lower Canada's deficit?			

Logging halt request snubbed

A NORTH Vancouver District request to ban logging in the Capilano Watershed was shot down by a 5-3 margin Friday by regional water district committee members.

By Ian Noble

News Reporter

They also called for more information before making a decision on an environmental group's request to conduct turbidity studies in local reservoirs.

Committee chairman John Northey said only one municipality has asked for the ban. He called the district's ban proposal selfish. He added such a ban would be detrimental to other

municipalities receiving water from the watershed.

North Vancouver District Coun. Janice Harris, the municipality's water committee member, wants logging based on "spurious" reasons such as insect infestations and fire hazards ended.

She said district council asked for the ban to provide security for residents who are opposed to logging in the watershed.

Harris does not see how a moratorium on logging until an ecological inventory now under way is completed can hamper the Greater Vancouver Water District's (GVWD) watershed management.

Committee members against the ban took comfort in a report by GVWD water and construction manager John Morse. The report

states no logging is expected to occur in the watershed for the balance of 1995.

Meanwhile Paul Hundal, the president of the Society Promoting Environmental Conservation (SPEC), requested permission to enter the Capilano watershed. The issue was not resolved.

Hundal wants to enter the watershed to perform experiments he said could help resolve the issue of whether logging and road building in the watershed leads to turbidity in Lower Mainland drinking water.

Committee members asked for more information about Hundal's plan. Current policy strictly regulates who can enter the watershed. During his presentation, Hundal showed a

See SPEC page 3

REACHING EVERY DOOR ON THE NORTH SHORE SINCE 1969

Display/Advertising 980-0511
Classifieds 986-5222

NORTH SHORE NEWS - PAGE 1 - MARCH 12/95



Photo submitted

A SLIDE at the Hollyburn spur road last year brought debris down a creek feeding the Capilano reservoir, according to environmentalist Will Koop.

SPEC access debated

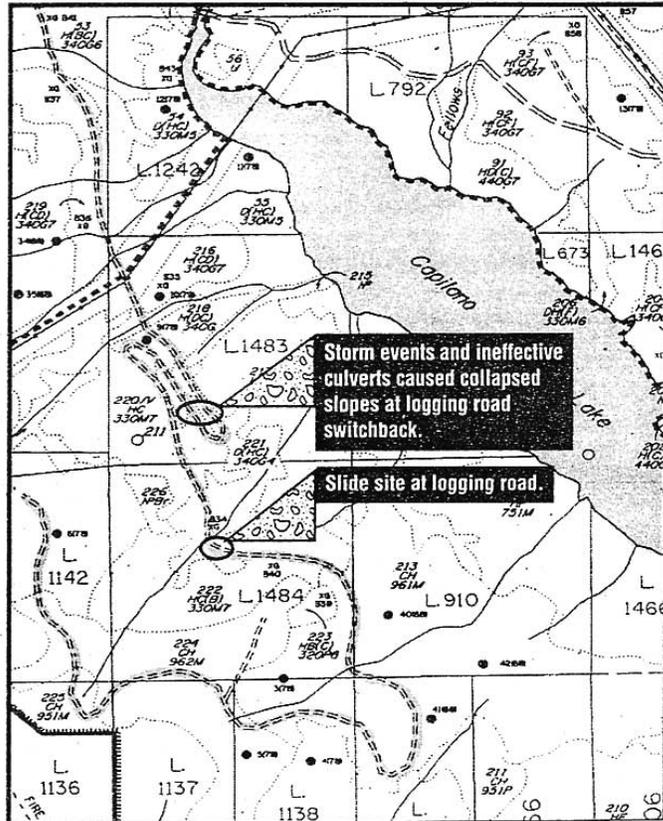
From page 1

video that he said contradicted a GVWD contention that slides in the watershed are natural and not affected by logging activity.

In the video, taken surreptitiously on the Hollyburn logging road in the Capilano watershed, narrator Will Koop said uncontrolled runoff during recent heavy rains caused the downward slope of the road to give way. Water district staff said the Hollyburn road is older and not up to the standards of roads built in the 1970s and 1980s. It is used mainly for fire access. Staff added the water district manages 330-kilometres (205 miles) of road at an annual cost of \$150,000.

The slide was not mentioned in a recent GVWD report of 22 significant landslides that occurred due to heavy rains. A remark by Hundal accusing Morse of a cover-up drew heated response.

Nortney said the meeting was not a "witch hunt" for staff. "Leave names out of it or you're out of here," he said to Hundal.



NEWS graphic Linda Douglas

ENVIRONMENTALIST WILL Koop has identified numerous slides at a Capilano watershed logging road.

WATER: Officials reject charges of watershed mismanagement

Continued from B1

Water district officials, however, reject the Koop video as nothing more than a misleading propaganda film shot by a law-breaker.

To get into the watershed Koop had to trespass into a restricted area that's closed to the general public to protect health standards.

Koop said he tried for several months to get authorization to tour the watershed, but eventually became convinced there was no way he'd be allowed to get a close look.

Koop, who is researching a book on the management of the watersheds, said that once he had the video he

knew he had no choice but to go public with it.

"You don't want to tell anyone you've done something illegal," he said. "But I thought the issue of watershed management was more important than whether or not I could get fined for trespassing."

Koop said the slides and erosion problems he documents in the film have not been reported by water district managers.

"We're getting partial information. We're not getting the whole picture."

He said road building and logging in the watershed has altered the natural hydrology of the region, increasing the speed with which water runs

off the mountainsides. That in turn has led to increased erosion and siltation.

"We have now to bear the costs of a misguided management system," he said. "We have to pay for the logging and road building — because now we're looking at filtration plants in Vancouver, that range from \$500 million to \$1 billion."

Koop claims that if logging and road building had never taken place in the watersheds, Greater Vancouver would have such a pristine water supply that treatment facilities would not be needed.

John Morse, manager of water and construction for the water district,

rejects Koop's claims.

"I'm dismayed and I'm somewhat aghast they seem to think they can just ignore the law for whatever reason they want," he said.

He dismissed as "nonsense" the claim that the water district is suppressing information about slides or erosion problems.

Morse said Koop's film focuses on one old road in the Capilano watershed that's in need of upgrading. "It's remarkable they just picked that one road."

"It's the only area that has sub-standard drainage structures," he said, noting the water district maintains about 3,000 culverts.

Morse said upgrade work on the road Koop walked has been put off because of budget restraints, and because it is a little used area.

He said crews clean the culverts every spring and fall, but he admitted it takes only one windstorm to blow down enough debris and branches to block them all up again.

Morse said the erosion and siltation problems shown on the film are minor in the big scope of things.

Morse denied the water district has been covering up slides.

Last December, he said, 22 big slides were officially recorded in the watershed, but many of the smaller events just weren't worth noting, or weren't noticed.

"The fact of the matter is we have many land movement events," he said. "A lot go unreported because you can't see them. Others are very modest — they are facts of life."

Janice Harris, a North Vancouver district councillor and a director of the GVWD, said she's glad Koop made the video.

She and other committee members saw it recently.

"I think it's informative, provocative and educational," she said. "It should prompt some thinking. The implications are important."

Harris said she's aware Koop had to trespass to make the film, but she said she thinks that is of secondary importance.

"It provides a visual record of the impact of logging and road building — that's what's important," she said.

Dorothy Beach, a member of New Westminster council's environment committee, agreed.

"It's a knock-out film. It's an expose," she said after seeing it recently.

"They can't deny clearcutting has had a powerful impact on the watershed now."

CAPILANO

Video shows problems in watershed, intruder says

MARK HUME
Vancouver Sun

One thing is sure, Will Koop's first and maybe last feature film will never make the Greater Vancouver water district's list of favorite home videos.

Koop, a Vancouver environmental researcher, slipped illegally into the Capilano watershed recently to shoot unauthorized footage documenting siltation problems.

Koop claims his video provides a visual record of unreported slides, eroded roadways, overflowing ditches and blocked culverts.

"I was shocked by what I saw in there," said Koop, who has started showing his video to district councils and environmental committees.

The video, a copy of which was obtained by *The Vancouver Sun*, follows Koop as he rambles down a road in the watershed, cleaning out plugged culverts and pointing to numerous erosion problems. He illustrates how the water, once diverted away from the culverts runs down ditches, eroding banks and carrying silt loads down toward Capilano Lake.

In one section, he stands in the middle of a massive washout that has ripped down the mountainside, depositing silt into the Capilano system that eventually feeds into Vancouver's taps.

The film, argues Koop, is irrefutable proof that logging and road building are causing serious water quality problems for Vancouver.

"It shows how badly mismanaged our watersheds are. It's shocking," he said.

Some of those who've seen the film agree, calling it "a provocative expose" that raises serious questions about the way our watersheds are being managed.

Please see WATER, B2

Group seeks end to watershed logging

Newsletter launched to back fight

A NEW newsletter that focuses on the Lower Mainland's three watersheds is an effort to guide public opinion and thwart the logging of old-growth forests in watersheds.

By Ian Noble
News Reporter

Ross Muirhead, founder of *Watershed Intelligence* and member of Friends of the Watershed, said the magazine's inaugural issue is timely because the Seymour, Capilano and Coquitlam watersheds are undergoing ecological inventories.

The ecological inventories will be used to draw up a long-term management plan for the watersheds.

By bringing out the first issue now, the public will receive an alternative view of what the ecological inventory is all about, said Muirhead.

Watershed management division administrator Bob Cavill said Greater Vancouver Water District hopes to present the Seymour ecological inventory to the public as soon as this fall.

The Capilano inventory is not expected to be finished until sometime in 1996, Cavill said.

Muirhead worries the ecological inventory will provide a renewed rationale to log old-growth timber under the guise of creating a stable, diverse and fire-resistant cover.

"I have yet to be swayed in the least that logging improves water quality," he said.

For his part, Cavill said he hopes the inventory will help the public understand the watersheds.

"Hopefully, this inventory is broad enough that it will capture a number of the risks associated with water quality and those are the kinds of things what we'd like to talk about with the public," he said.

Muirhead said taxpayers are paying for a \$1 billion treatment project for water taken from the Capilano and Seymour watersheds because of turbidity resulting from logging in the watersheds.

Along with being the driving force behind the newsletter, Muirhead earlier photographed a video showing plugged culverts and washouts beside roads in the Capilano watershed.

The video, narrated by water-



NEWS photo Paul McGrath

AUTHOR ROSS Muirhead's *Watershed Intelligence* newsletters aim to inform the public about past and current water issues from a conservationist's perspective.

shed historian Will Koop, received widespread media attention.

Muirhead added his motivation for writing the 24-page report was to provide background information to incoming members of the water committee, which is composed of elected officials.

He said many of the new members appointed earlier this year didn't have backgrounds on watershed issues.

Still, Muirhead said, they were expected to make important decisions that affected the Lower Mainland's drinking water.

The spring issue of *Watershed Intelligence* includes articles on periods of turbidity that have closed the taps at Capilano reservoir, spotted owls, and a logging firm's court victory against the Greater Vancouver Regional District.

It also includes an article on a "cover-up," saying a water district report omitted information about the effect cutblocks had on landslides.

The water district hotly contest-

ed the cover-up charges earlier this year.

Since logging resumed in 1961, more than 4,000 hectares (9,640 acres) of watershed have been logged and an additional 600 hectares (1,482 acres) have been destroyed due to road construction, said Muirhead.

Although there is a moratorium on logging during the inventory process, Muirhead worries renewed logging and road building will increase turbidity levels and lead to more chlorine in local water.

He argues turbidity levels could be reduced by allowing clearcuts to become mature forests, retiring secondary logging roads, fitting reservoir banks with reinforcing materials, and banning logging and road building.

Muirhead agrees with thinning second-growth forest to start the process of it becoming a closed canopy forest.

To get a copy of the quarterly, call Muirhead at 986-9773 or visit the nearest North Shore library.