

KEYNOTE ADDRESS

by

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Some months ago, Roger Berdusco of Fording Coal approached me with the request that I give a somewhat informal speech at the Canadian Land Reclamation Association's meeting to be held in Cranbrook. In a moment of weakness, without too much thought as to the enormity of the responsibility which was being vested in me by Roger, I agreed. On reflection, I would probably have been better off to decline gracefully since there are obviously a great number of people, many of them present here today, who could have spoken much more adequately about land reclamation and its implications in the Canadian scene.

However, having given my commitment, I will proceed to do what Roger has asked me to do and address myself to some items which could be construed as interesting to specialists in the art and science of reclaiming disturbed land.

For the past two days you have been regaled with sundry advice concerning the regulatory aspects of land reclamation, you have observed the process of natural revegetation of exploration trenches in Montana, you have controlled erosion in the Queen Charlottes and have listened, with bated breath, to various speakers who have itemized the mysteries of soil cultivation and seed selection for returning disturbed land to, at least, minimal productive capacity.

Additionally, many of you have got claustrophobia, sore feet and sunburn as a consequence of the field trip to Cominco's Sullivan mine and concentrator yesterday afternoon. Presumably, with representatives from so many parts of the country, this event will figure in the next Canada summer games.

According to information published recently by the Mining Association of Canada, the total land area occupied by mining operations in Canada, approximates 130,000 acres. This represents about 0.006 per cent of the total land area of Canada and compares with 30 million acres occupied by highways and 172 million acres devoted to farming. It is somewhat surprising to me that given this rather small area that outcries can arise from what we can only presume is an uninformed public. One does not hear a great deal of concern with respect to agricultural and industrial endeavours and particularly when these are in rather remote areas. Presumably, the mining industry has not done its homework with

respect to public relations and it is hoped that this deficiency will be remedied through the various mining associations and mining companies throughout the country in the future. It is a known fact that some significant efforts in this information exchange field are being undertaken in more recent times.

There is one item which has been of consuming interest to me personally even though it is only remotely concerned with land reclamation. This issue has become one of the most emotionally charged environmental topics of our time. I refer, of course, to the Love Canal and to the problems which this particular disposal site has caused for all persons who have been in contact with it since the first placement of toxic wastes took place in 1942.

The saga of the Love Canal began many years ago. In the late 1800's, William Love had a dream about the utilization of the energy from Niagara Falls. He began work on the Canal in 1894 on the excavation of a canal which was designed as the primary source of power which, in conjunction with plans made by Elon Hooker of the Hooker Electrochemical Company, would bring unparalleled prosperity to a region which was ideally situated with respect to markets for the manufactured chemicals which were to be made by the company.

Because of the money situation at the time and compounded by the fact that the economic transmission of power over long distances was achieved, the project died in 1910. For the next 30 years, the completed portion of Love's Canal, located in an undeveloped area several miles from downtown Niagara Falls, served as a monument to William Love's dream.

In September 1941, Hooker initiated feasibility studies to determine the suitability of using the unfinished canal because its bottom and sides were of impermeable clay. It was determined that the canal was suitable as a disposal site for wastes from Hooker's Niagara Falls manufacturing operation. Since the canal had been dug out of clay it assured that the chemical waste would remain in place indefinitely. Through a series of legal problems involving title descriptions, the consumation of the sale of the property to Hooker was delayed until 1947.

From 1942 until 1953, the company used the site for disposal of waste materials from its Niagara Falls operation. Its use was superior to

many methods of disposal used by industry at that time. Progressively, as Hooker disposed of wastes, the particular portion of the canal affected by the disposal was covered with a layer of the same clay material which formed the bottom and sides of the canal. It is of interest to note that the use of clay to contain chemical wastes meets, in every respect, pending Federal RCRA standards.

In 1952, the Niagara Falls Board of Education came to the conclusion that the general area around the Love Canal was going to continue to develop and it announced its intention to build a school in that neighbourhood. The School Board indicated that the canal property was the only area which was suitable for the school. The Board indicated that it was so desirous of acquiring the property that condemnation might be resorted to.

In March 1952, a Hooker executive visited the site with the Board Superintendent and President. Hooker had a map prepared showing where the wastes were deposited, how they were covered, and the results of testing which had recently been completed. On the map provided to the Board, it was stated that there was: "no evidence of chemicals any place digging down to ten feet right up to within one foot of the excavations. In places where we have dumped chemicals, the chemicals are almost unchanged in form and found four feet below top surface."

In October 1952, Hooker sent a letter to the Board confirming the company's understanding with the Board that the Love Canal property was to be used for a school:

... and the balance of the property to be maintained as a park.

... as explained to you at our conferences in view of the nature of the property and the purposes for which it has been in use, it will be necessary for us to have special provisions incorporated into the deed with respect to the use of the property and other pertinent matters.

Acknowledgement of the warning given by Hooker to the Board was made by the President of the School Board who specified that future members of the Board and other later owners of the Love Canal property would know that it was not suitable for construction because chemical wastes had been deposited there.

The deed from Hooker to the Board states, in part:

"Prior to the delivery of this instrument of conveyance (deed), the Grantee (Niagara Falls Board of Education) herein has been advised by the Grantor (Hooker Electrochemical Company) that the premises above described have been filled, in whole or in part, to the present grade level thereof with waste products resulting from the manufacturing of chemicals by the Grantor at its plant in the city of Niagara Falls, N.Y. and the Grantee assumes all risks and liability incident to the use thereof."

During the next few years, the Board allowed thousands of cubic yards of the canal cover to be removed; this is documented by the Board records.

In 1957, the Board was considering the transfer of unused sections of the canal property to private developers. At that time, a representative of Hooker appeared before the Board's regular meeting to remind the members of the possible dangers of using the Love Canal for construction because of the chemicals buried there. At that meeting, the Board directed that a letter be forwarded to Hooker "...expressing appreciation for sending their representative here tonight to explain the conditions of the soil near the 99th Street School when there was no legal obligation on their part to do so." All of this was reported to the public in the following day's issue of local and area newspapers.

A similar representation was made to the Board two weeks later by the Vice-President and General Counsel of Hooker Electrochemicals. They opposed the sale of the property and amplified the remarks made to the Board at the prior meeting. This second representation was acknowledged in the minutes of the School Board meeting at the appropriate time.

During the next few years, the city constructed two streets through the canal and, in 1968, the state of New York began construction of the La Salle expressway, which resulted in the relocation of another street through the southern portion of the canal.

It wasn't until 1976 that Hooker learned that chemicals were seeping out of the canal and into basements of some homes on the periphery of the Love Canal property. This was the first evidence that chemicals had migrated from the canal into adjacent properties.

A task force, formed in 1977, comprised of the city of Niagara Falls, the Niagara County Health Department and Hooker Engineers began to study the situation. The city, acting as lead, commissioned Calspan Corporation of Cheektowaga, N.Y. to prepare an abatement plan. Subsequently, the city commissioned Conestoga-Rovers of Waterloo, Ontario, Canada to prepare a remedial program. Three months later, Conestoga-Rovers presented its recommendations for a system to contain the wastes migrating from the canal. Hooker also participated in the study and offered to pay one third of the expected costs of remedial work to the southern section of the canal which is estimated at \$840,000.

The recommended remedial engineering program was designed to collect and treat leachate formed when the canal cover was disturbed allowing rain and melted snow to fill the clay-lined canal and overflow much like a bathtub.

Testing has shown that even today the lower sidewalls and bottom of the canal are containing the waste materials as originally intended. Commencing August 2, 1978, the New York State Health Commissioner ordered the temporary closing of the 99th Street School (adjacent to the canal) and recommended the temporary evacuation of pregnant women and children under two years of age living in the first two rings of homes around the canal property (no homes were constructed on the canal).

One week later, Governor Carey visited the area and announced that 236 families in the first two rings of homes bordering the canal would be evacuated and their homes purchased.

There have been a number of studies since that date with respect to the health impact of the consequences of seepage from this storage area but, as appears to be common in these studies, there have been accusations of poor design and unwarranted conclusions from various studies on the basis of lack of scientific evidence.

It is paradoxical that, on June 30, 1980, William Sanjour, Chief of the E.P.A. Hazardous Wastes Implementation Branch, in discussing Hooker's use of the Love Canal reported in the New York Times that "Hooker would have no trouble complying with these (Federal RCRA regulations). They may have had a little extra paper work but they wouldn't have had to change the way they disposed of the waste."

In May 1980, President Carter declared a state of national emergency in the Love Canal area, paving the way for the temporary evacuation of up to 710 families. The same day, the U.S. Department of Health and Human Services released a special panel's assessment of the E.P.A. report and its conclusion was that the study:

... provides inadequate basis for any scientific or medical inferences from the data (even of a tentative or preliminary nature) concerning exposure to mutagenic substances because of residence in the Love Canal area.

... we do not believe that on the basis of this report it could be concluded that "chemical exposures at Love Canal may be responsible for much of the apparent increase" nor can we concur with the reports implication of cytogenic observations suggest that the residents are at increased risk of neoplastic disease, of having spontaneous abortions, and in having children with birth defects based on the evidence presented.

A similar report on the situation from the epidemicological viewpoint was announced by the New York Department of Health. This indicated that rates of miscarriage and birth defects for the entire Love Canal area were normal. The study also concluded that there was no evidence linking any health problems which do exist to the migration of chemicals from the Love Canal.

The New York Department of Health report concluded:

... Finally, and most importantly, we have not yet been able to correlate the geographic distribution of adverse pregnancy outcomes with chemical evidence of exposure. At present, there is no direct evidence of a cause-effect relationship with chemicals from the canal.

This position was reaffirmed in October 1980, when a special panel of prominent physicians appointed by New York Governor Carey reviewed previous Love Canal health studies. The panel was particularly critical of two studies which had been earlier used as the basis for the evacuation of Love Canal residents.

These then are some of the facts, as I see them, with respect to the Love Canal. What conclusions can be reached?

The original containment was good; the migration of chemicals from the canal occurred because of a failure of others to properly maintain the site after the company no longer owned the property and despite repeated warnings by the company. In all respects, it would appear the company acted properly and responsibly.

Many of the comments which I have used are taken from an article published in Chemteck of December 1980. The article was provided by Mr. T. L. Baeder who was, until September 1980, President and Chief Operating Officer of Hooker Chemical.

There is of course, a tendency, as is evident when you read Mr. Baeder's article, for any corporation or any individual to over-react in terms of self-defense. This is understandable and sometimes commendable. It does, however, illustrate that each of us has a serious responsibility with respect to the future as it relates to land reclamation and, furthermore, technology and professionalism used today may well be inadequate for the demands and expectations of future generations.

In conclusion, I wish to thank you for your kind attention, and to wish you a very pleasant day tomorrow on your field trip to Fording Coal and B.C. Coal. I am sure you will find that both of these corporations have done a great deal, in terms of practical, applied land reclamation technology to justify this day which you will spend at these two properties. Thank you.