

**BENNETT LAKE AT CARCROSS
HYDROMETRIC STATION**

A Water Contaminants Evaluation under the Mercury Project

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HYDROMETRIC STATION**

A Water Contaminants evaluation under the Mercury Project
File 9590-2-9

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BACKGROUND

Carcross is located 72 kilometres south of Whitehorse on the Klondike Highway. The Bennett Lake hydrometric site is located on the southwest edge of the Carcross town site just west of the British and Yukon Railway bridge (Lat 60 09 50 Long 134 42 27). The station was established in 1947 for the British Yukon Navigation Co. Ltd, as a manual gauge affixed to the rail bridge. In 1968 a recorder was installed and it is thought to have existed at the current site until replaced by a newer adjacent building in 1996. Both buildings currently occupy the site (photo A). The station was operated as a Federal entity until 1985, when it became a shared Federal and Territorial operation. It became a solely Territorial operation in 1995. The building examined in the report was mothballed in 1996 and is the one built in 1987. No record of the disposition of buildings before that time was obtained.

Evaluation

A preliminary evaluation was conducted on the older building and site. The new (1996) structure contains a mercury manometer, but as it is an operating station, only a visual evaluation of the building was attempted. The site evaluation was conducted in October of 1997 by DIAND staff with a front end loader rented for the purpose. The site was examined for: integrity of the building, soil condition, and visible evidence of mercury contamination in both the building and the soil. The building was successfully raised (photo B) and the soil under the base exposed (photo C). Soil samples were collected under the structure to evaluate methylation rates and from an adjacent area for background values.

RESULTS

Building

The older building is of plywood construction (photo A) with a plywood floor (photo D) and contains shredded material from rodent occupation. The orifice line is still connected to the building and buried (photos B and C) but all other equipment has been removed. There is mercury present on the floor and the recorder support, mixed with the rodent debris. Two drilled holes exist in the floor under the support (photo D). Mercury was observed on the ground beneath the building below the holes in the floor (photos E and F).

Site

The station is located on a bench some 2 metres back from the edge of the bench above Bennett Lake (photo G) at the head of the Nares River. There is a pipeline running 2.5 metres south of the station site and the centerline of the British and Yukon Railway line is 7.5 metres south of the building (photo H). As the rail right of way is 60 metres wide at this point the site is on private B&YR land. Conversations with Water Survey of Canada staff, who operate the site, indicate no awareness of an agreement on between Water Survey and B&YR on the use of this site. To the best of DIAND staff knowledge the site is unauthorized. Soils at the site are cold, but not frozen, as there is no permafrost in this region. The soils here however may be the warmest in the Territory and should offer the highest rate of methylation available in the Yukon.

Other Equipment

There is a second building adjacent to the existing one (photos A and H) that contains a mercury manometer in operating condition. No contamination of the interior this building was apparent.

CONCLUSIONS

This site is definitely contaminated and removal of both the building and soil will be required for remediation. An evaluation of the soil at the other building site may be required to insure that both sites are clean. The removal of the mercury manometer from the existing building may be advisable due to it's location within a community as well as the environmental reasons.

The biggest problem to address on the site may be that it is situated on private land held by a Corporation. What the Corporation may require for site clean up and the response of the First Nation and the Carcross community to the site are unknowns.

Access to the site is good and the transportation of soils and buildings can be readily achieved. The site presents few difficulties for total site clean up, other than the presence of an active station on site.

RISK ASSESSMENT

The location of the site within the limits of a community, land use status, and the local First Nation's sensitivity to other environmental problems in the area, represent the most important variables within the risk assessment. Despite the good public access to the site, the contamination is contained under the building and the exposure risk associated with the area should be considered moderate. The environmental risk posed by mercury at this site is low, as even at the relatively warm soil temperatures in the area, the methylation rates should be slow. However, there are no data available at present to support this hypothesis regarding methylation. The local sensitivities and land status present a high risk for Departmental exposure to both adverse media and litigation effects. The combined risk assessment for this site is high.

RECOMMENDATIONS

Despite the moderate environmental and health concerns, the perception of problems and land status should make this site a priority for clean-up. This site can be cleaned with the removal of a minimum of contaminated soil unless the second building site has been contaminated as well. The older building is completely contaminated and must be handled as such, while the newer structure appears to be clean

Removal can be accomplished easily through access down the rail line with light equipment, if permission for such access can be obtained from BY&R. It is recommended that the building be sealed and removed intact from the site for disposal outside of the community. The second building may also need to be removed from the site dependent on BY&R wishes. At a minimum, the mercury manometer in the operational building should be replaced due to its potential for future contamination and a renewal of the issue.

COST

The expense of removing the structure and associated material would be moderate, with the highest cost associated with the disposal of the building and soils. The rental of a loader at the site should not exceed \$500.00. There is a disposal cost of \$1000.00 per barrel for contaminated soils and the site would likely require only one barrel owing to small foot print of the station, although the status of soils under the second site is unknown. The cost for disposal of the building is unknown at this time, as is the cost to move the operating station to a new location, should that be required. If it assumed that only one building site is involved the exercise then costs, including labour, would be less than \$5,000. Removal or relocation of

the second building, possible site clean up, and the costs of replacing the manometer and recalibration of the recorder are unknown at this time.

PRIORITY

On the basis of cost and risk this site is assigned a high priority for remediation.



Photo A: Old (c 1987) and new building (c 1996) on site



Photo B: Old building being moved



Photo C: Exposed soil under building



Photo D: Shelf with rodent debris



Photo E: Holes in floor of building



Photo F: Mercury on ground

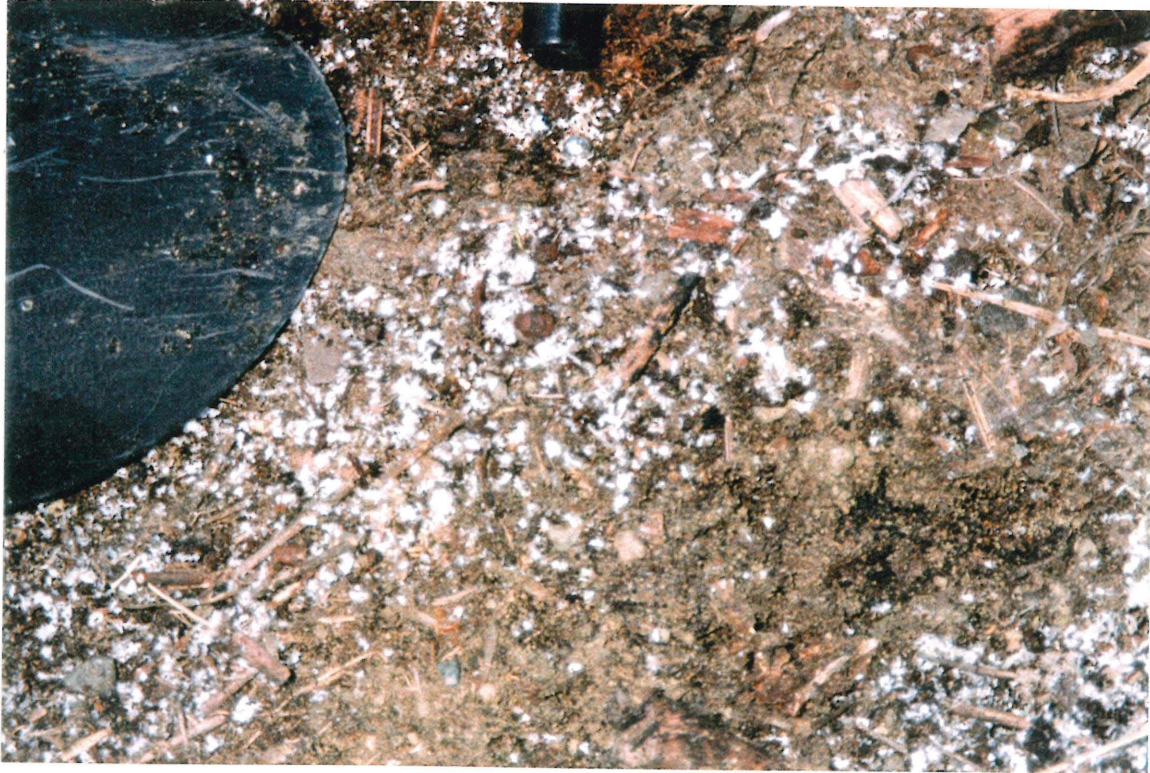


Photo G: Close up of mercury



Photo H: View of buildings on site, rail line, bridge, and



Photo I: View of site with rail line and pipe line