REMEDIATION OF SITE 050 OF THE MID-CANADA RADAR LINE: IDENTIFYING POTENTIAL SITES OF CONCERN UTILIZING TRADITIONAL ENVIRONMENTAL KNOWLEDGE

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Abstract / Résumé

The author outlines the process of identification of specific pollution sites from a former radar base in northern Ontario. He describes the value of using Traditional Evnironmental Knowledge (TEK) to pinpoint and evaluate places in need of remediation.

L'auteur présente le processus visant à cerner précisément des sites de pollution sur le terrain d'une ancienne station radar dans le nord de l'Ontario. Il souligne la valeur de l'utilisation du savoir écologique traditionnel pour localiser avec précision et évaluer les emplacements qui ont besoin d'être dépollués.

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Introduction

The Mid-Canada Radar Line (MCRL) was constructed between the years 1954 and 1957 by the Canadian government during the "Cold War". It was a component of a larger surveillance network that included the Distant Early Warning stations and the Pine-Tree Line (Russell *et al.,* 1995; Environmental Sciences Group, 1999). The MCRL consisted of 98 stations and stretched from coast to coast; Hopedale in Labrador was the most eastern station with the western most station being located in British Columbia, at Dawson Creek. The Ontario segment of the MCRL included three manned stations (Winisk [site 500]; Cape Henrietta Maria [site 415]; Anderson Island in Fort Albany [site 050] and twelve unmanned stations, located between the 52nd and 56th parallels. Each station was situated approximately 30 miles apart. Although much money and effort went into the construction, operating, and maintenance of the MCRL, these strategic outposts were only in operation until the year 1965 (Environmental Sciences Group 1998, 1999).

Most sites were partially decommissioned by a firm from Manitoba; however, the site in Fort Albany was unique in that the radar base (and other equipment and supplies) was acquired by the Roman Catholic Episcopal Corporation (Gibson, 1993). The Episcopal Corporation subsequently offered to supply electricity to homes in the village of Fort Albany. Indian Affairs accepted the offer (on behalf of First Nations people) and asked Ontario Hydro to install and administer the service for a five-year period, with the recently acquired radar-base generators supplying the power. After a new power line was constructed to service nearby Kashechewan First Nation, more generators were purchased by the Episcopal Corporation to meet the increasing demand for electricity. After the five year agreement with Ontario Hydro was over, Ontario Hydro purchased the electrical complex from the Church. This electrical complex supplied power for both Kashechewan First Nation and Fort Albany First Nation until 1988, when it was closed down as the new diesel generating system located beside James Bay Hospital came on-line (Russell *et al.,* 1995; see Langstaff, 1998 for a detailed account). This rather complex case history for MCRL Site 050 has to be presented, in order to understand the movement of material, buildings, electrical equipment, etcetera from the radar base (and construction camp) to other locations in the Fort Albany area.

As part of the initial environmental assessment process, potential sites of contamination and/or potential safety hazards (e.g., sites posing potential physical threat from unsafe structures) were identified, documented, and investigated by a field team comprising personnel representing the three major participating organizations. The federal government (Department of

National Defence) was represented by the Environmental Sciences Group of the Royal Military College of Canada, while the Ontario government was represented by the Ministries of Natural Resources and Environment and Energy. Personnel belonging to regional First Nation organizations (Mushkegowuk Council and Nishnawbe-Aski Nation [NAN]) were present in an effort to safeguard First Nation interests (Environmental Sciences Group, 1999). The role of Ontario Hydro at this time was not yet clearly stated, however, personnel from this company have been present during different portions of the project.

Although all documented, potential sites of concern were investigated by the above-described field team during 1998 (Environmental Sciences Group, 1999), others had yet to be examined because other potential sites of concern, had only to this point, been informally discussed by members of Fort Albany First Nation. Thus, at the Steering Committee meeting held on March 22, 1999 in Fort Albany, one of the authors of the present article (John Kataquapit [JK], the Fort Albany First Nation representative) informed the group assembled that additional buildings (materials, etcetera) originating from MCRL Site 050 (and its construction camp) had not yet been examined because they had yet to be definitively identified. In this paper, we present results of an unpublished report that illustrates how traditional environmental knowledge (TEK) was utilized to formally identify all known, potential areas of community concern with respect to MCRL Site 050 and its associated construction camp. It should be stressed that these potential sites of concern would not have been investigated if TEK had not been utilized.

The Study Area

Fort Albany First Nation is located on the western shore of James Bay (52°15'N, 81°35'W) in northern Ontario, Canada. It is a community of approximately 850 people where the Cree language is still predominantly spoken. The village proper is located on Sinclair Island although some Band members reside on nearby Anderson Island and on the Mainland. Fort Albany First Nation is represented regionally by the Mushkegowuk Tribal Council (most western James Bay region First Nations are members) and the NAN organization (Treaty #3 and #9 First Nations).

Methodology

We define TEK as the body of knowledge accrued over generations by First Nation People with respect to their environment being both spiritual and ecological in nature (Doubleday, 1993). This knowledge was typically

not written down, being disseminated solely through oral tradition (Colorado, 1988). Traditional environmental knowledge is also known as traditional ecological knowledge, Indigenous knowledge, or local knowledge.

As requested by Fort Albany First Nation, all questions were directed to JK, their expert in this subject area because he had actually worked for Carter Construction in the construction of the radar base. It should be emphasized that people participating in TEK studies are often not chosen randomly because although all "Elders have life experiences to share...some have specialized training and knowledge" (Colorado, 1988:56).

During the month of April 1999, buildings and areas of potential contamination/concern were initially identified through a semi-directive interview process with JK. Afterwards, each site was visually identified in the field (by JK, another Band representative Guy Iannucci [GI], and Leonard Tsuji [LT]) and marked on Band supplied maps. The only potential site of concern during this initial survey that could not be examined (due to this area being restricted by the Ontario Ministry of Transportation) was located near Lake St. Anne, by the airport runway. Subsequent to the initial survey, a site visit was arranged with a Ministry representative. The airport-strip dump located by Lake St. Anne was then marked on the appropriate map. All previously identified potential sites of concern were later verified by GI and LT. At this time, photographs were taken of the buildings and some areas of potential concern. Photographs of the Lake St. Anne dump could not be taken until the following day due to restricted access to this site as previously described. Subsequently, the marked Band maps and photographs were reviewed by JK and found to be accurate in detail and presentation. In the present article, only those sites or buildings that could be positively identified by JK as originating from the radar base (site 050) and the Carter Construction camp will be presented. Several buildings identified by other Band members as potential buildings of concern with respect to site 050 were not confirmed by JK, after site visits and/or viewing maps and photographs. A map of the MCRL base and the Carter Construction Camp, based on a drawing by JK, is also presented.

Potential Buildings/Sites of Concern

Buildings originating from radar base 050 were typically of metal construction, while those from the Carter Construction Camp were of wood construction. The Carter Construction Camp was erected prior to the radar base and acted as the base of operation for the contractors as they erected the radar base. During the 1970s, the Roman Catholic Mission moved buildings from the construction camp to the village and mainland. Pre-

viously, during the period 1965 to 1966, steel buildings from the radar base were moved by the Roman Catholic Mission to various locations. The electrical building was cut in half and used in Paul Koostachin's Hotel on the mainland. The building that housed the sleeping quarters and bar for the radar base was also sectioned, moved and became the apartment complex previously used as teacherages on the mainland. The building, containing the kitchen unit was divided-in-two and made into classrooms on the mainland. A less detailed account than the TEK supplied by JK can be found in Bishop Leguerrier's memoirs (Russell *et al.*, 1995). It should be noted that the federal government is in possession of documentation that itemizes the hundreds of items that were sold to the Roman Catholic Episcopal Corporation during the transfer of the radar base because Bishop Leguerrier had to sign a form in Ottawa for each item acquired (Russell *et al.*, 1995).

Sinclair Island

On Sinclair Island 14 potential sites of concern were identified (Figure 1). Location number and supplemental information if available will now be presented (i.e., type of structure/site [e.g., shed, garage, dump]; source of building/material if known): 1. dump; 1a. dump; 2. garage, construction camp; 3. shed, construction camp; 4. Old village laundromat, construction camp; 5. dump; 6. shed; construction camp; 7. old Koostachin's store, construction camp; 8. shed, construction camp; 9. shed, construction camp; 10. shed, construction camp; 11. shed, construction camp; 12. house, construction camp, (note: six other structures of similar construction were used as homes in the village in the past); and 13. the old dump.

The Mainland

Eleven potential areas of concern were identified on the Mainland (Figure 2): 1. Paul Koostachin's hotel, electrical building hallway from the radar base; 2. shed, construction camp; 3. house/apartments, radar base; 4. shed, construction camp; 5. freezer plant, radar base; 6. area where a storage building was torn down, radar base; 7. area where a storage building was torn down, radar base; 8. area where girls dormitory used to be located, construction camp; 9. airport dump, Roman Catholic Mission/radar base/construction camp; 10. dump by the hospital; and 11. the dump.

Anderson Island

Lastly, on Anderson Island (Figure 3), seven potential sites of concern were recorded: 1. little lake/pond where 45 gallon drums were located prior to a summer-student clean-up project, radar base/construction camp; 2. area where asbestos was buried, St. Anne's School; 3. general dump; 4.

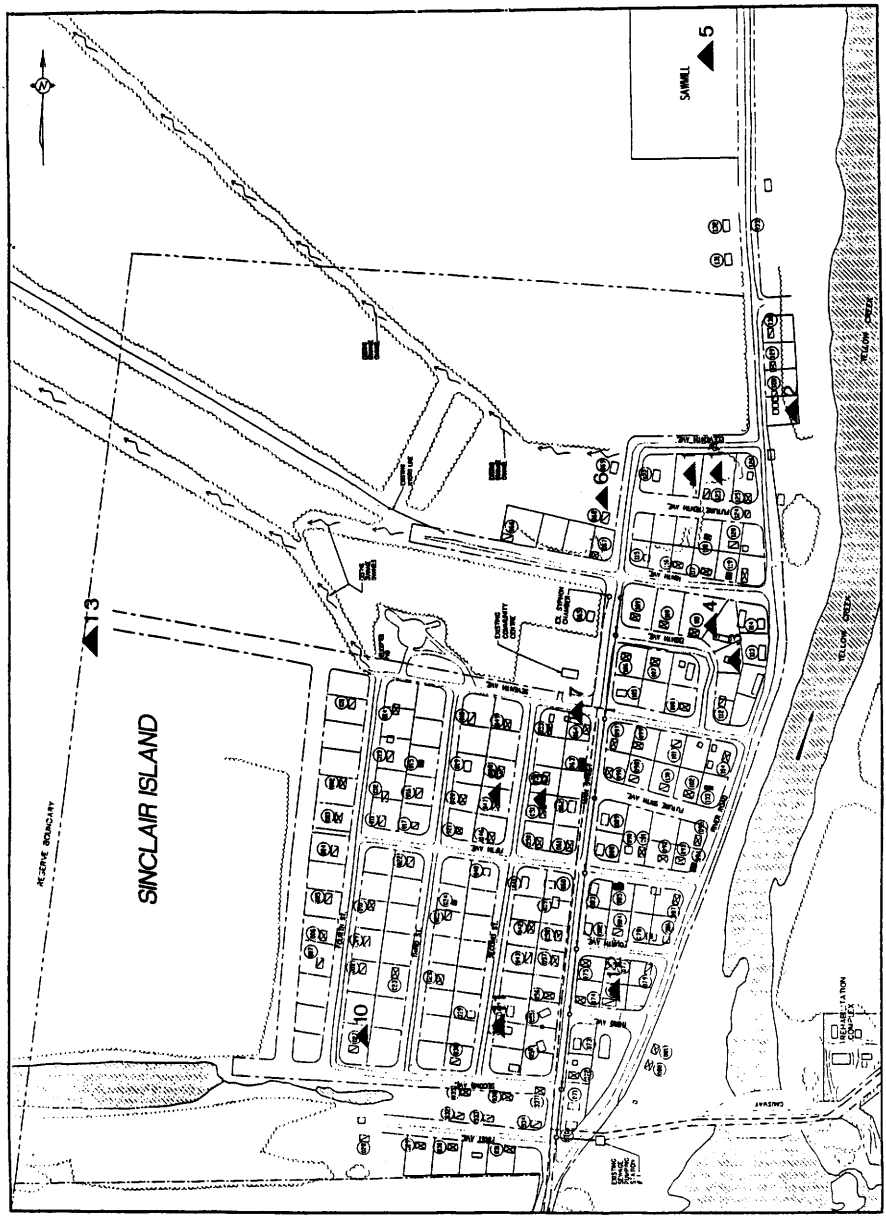

Figure 1: A map of Sinclair Island with potential sites of concern (identified by TEK) represented by shaded triangles and corresponding numbers.

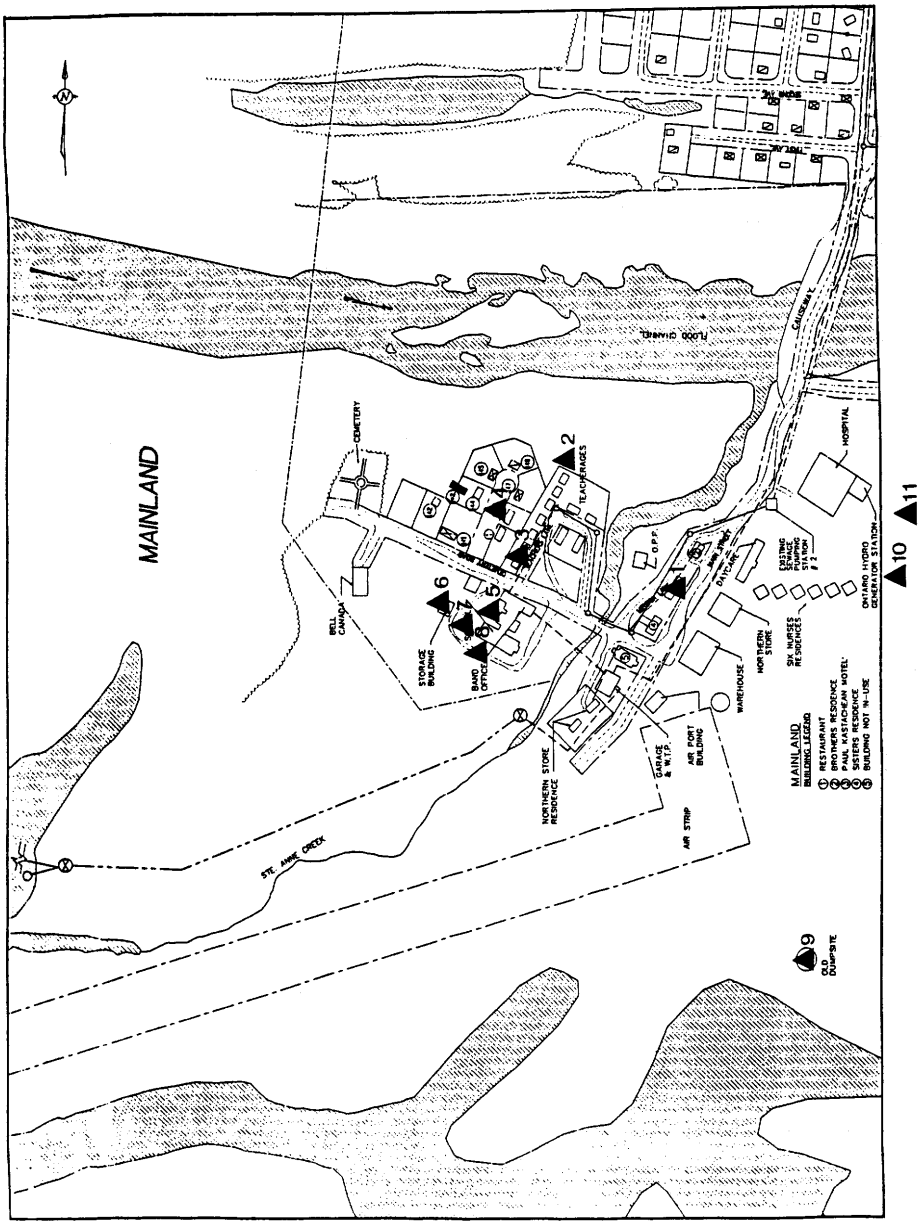

Figure 2: A map of the mainland with potential sites of concern (identified by TEK) represented by shaded triangles and corresponding numbers.

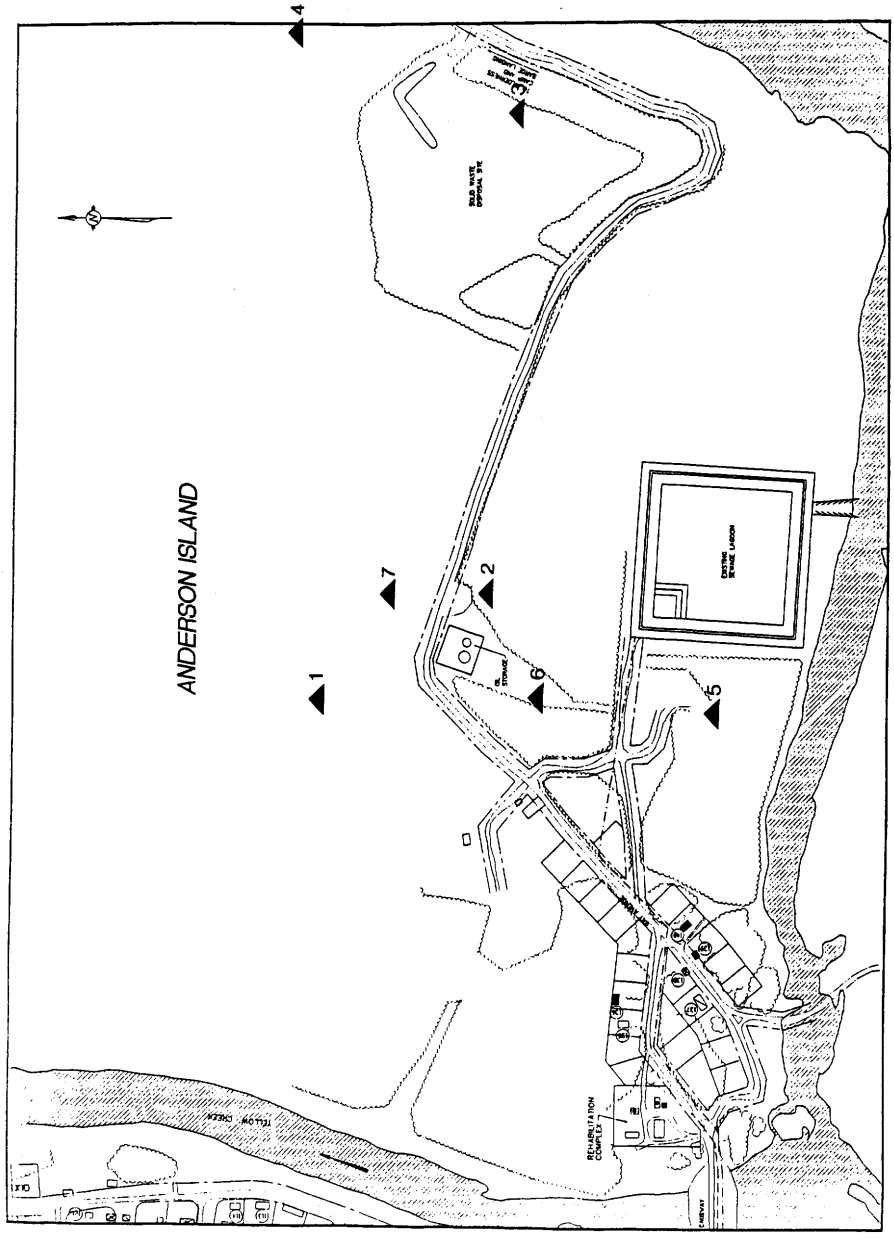

Figure 3: A map of Anderson Island with potential sites of concern (identified by TEK) represented by shaded triangles and corresponding numbers.

Mid Canada Radar Line Site 050

1. power house;
2. tanks;
3. kitchen;
4. bar and sleeping quarters;
5. hall;
6. electrical building;
7. freezer;
8. garage;
9. gravel road;
10. bunk house;
11. water plant;

Carter Construction Camp

12. garage;
13. camp road;
14. electrical building;
15. recreation building;
16. oil tanks;
17. dump;
18. communication building;
19. main office;
20. kitchen and dining building;
21. storage building;
22. bunk house;
23. helipad;
24. oil tank;
25. lagoon

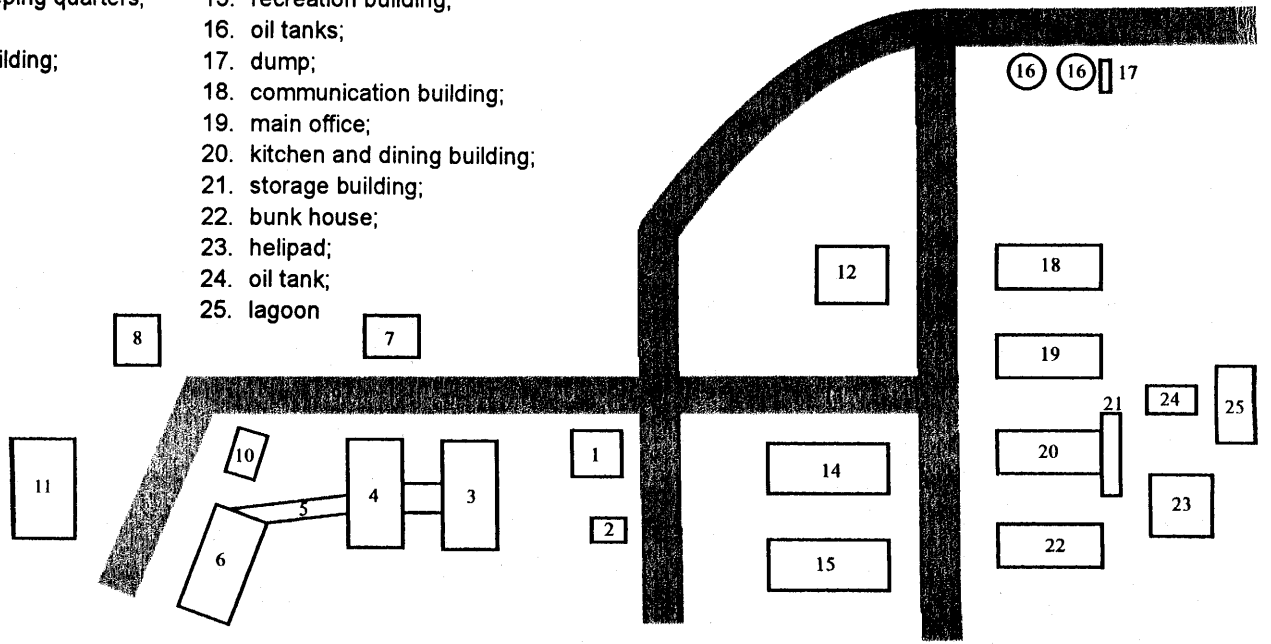

Figure 4: A Depiction of the Mid-Canada Radar Line Site 050 and the Carter Construction Camp as originally sketched by John Kataquapit (Fort Albany First Nation Representative). Numbers are included to represent these structures or areas.

base dump, material/substances from radar base; 5. helipad, radar base; 6. Carter Construction Camp, 8 to 9 areas where buildings used to be located can be distinguished looking at differences in growth of vegetation – height of vegetation and species; and 7. the above-ground oil line to the barge.

Carter Construction Camp

A diagram of the Carter Construction Camp (Figure 4) based on TEK supplied by JK, illustrating the relative position of structures (not to scale). Locations of buildings, torn down or moved off the radar base are also presented in this map; this information being supplemental to the "Fort Albany – Site Overview" (Map 8) contained in the report by the Environmental Sciences Group (Environmental Sciences Group, 1988).

Discussion

The "validity" of TEK has been established in several studies (Johannes, 1978; Tsuji, 1996; Fergusson and Messier, 1997); however, as stressed by Johannes (1993) and Tsuji (1996) one must separate observation from interpretation. This is especially true when considering potential sites of contamination (e.g., lead, mercury, polychlorinated biphenyls [PCBs]) and areas that pose a potential physical hazard. Traditional Environmental Knowledge can provide the location of the potential sites of concern but science (e.g., toxicology) must provide the evidence that these sites pose an environmental threat. For example, Mr. J.G. Koostachin at a community meeting held in Peawanuck on September 22, 1998, described to representatives of the Environmental Sciences Group

> an incident in 1986 where a 5000-gallon fuel tank being slung by a helicopter was dropped, resulting in a fuel spill (Environmental Sciences Group, 1999:26).

Scientific investigation of this potential area of concern yielded positive results as described in the 1999 report (Environmental Sciences Group, 1999:26):

> Although there is no surface staining in this area, the vegetation appears stressed. Surface samples collected here and analyzed for TPH [total petroleum hydrocarbons] were clean, but samples collected at depths up to 1 m were contaminated with TPH levels exceeding 1000 ppm. The area was delineated and it is estimated that 40-50 m^3 of soil is contaminated with TPH.

In this example, Mr. Koostachin provided TEK in the form of a location where a potential source of contamination may have existed and western

science provided confirmatory evidence that this potential area of concern was actually a site of contamination. Further consultation with Mr. Koostachin was also fruitful yielding the identification of an area, subsequently, found to be contaminated with TPH and polycyclic aromatic hydrocarbons. This area was apparently used for the disposal of vehicular oil (Environmental Sciences Group, 1999). In remote areas, where written documentation of contaminant spills and other information of importance with respect to remediation of these sites are sometimes scarce or non-existent (Langstaff, 1998), the importance of TEK cannot be over-emphasized.

Although several Fort Albany First Nation representatives stated that it was commendable that TEK had been incorporated into the environmental assessment component of the MCRL remediation project, they raised several additional points. They suggested that in the past, traditional land-use practices on Anderson Island may have brought First Nation people into contact with contaminated areas, plants, animals, and fish. Indeed, Anderson Island has been used extensively by members of Fort Albany First Nation for a variety of activities/reasons, such as: 1. a place of residence; 2. a place of schooling (e.g., Northern College classes); 3. a place of leisure for adults and children; 4. a place to exercise (e.g., jogging); 5. a place of work; 6. harvesting of cranberries; 7. harvesting of grouse; 8. harvesting of fish in Yellow Creek; 9. snaring of rabbits; and 10. trapping of martens (Tsuji *et al.*, unpublished data). This line of thought does have some scientific merit, because in a recent report of the Environmental Sciences Group (Environmental Sciences Group, 1999:vi), it was stated that:

> An area of Fort Albany [on Anderson Island] is contaminated with PCBs. Concentrations of up to 21,000 ppm were found in soil, and 550 ppm in plants, providing clear evidence that contamination is entering the food chain. Material that contains over 50 parts per million (ppm) PCBs is regulated under the Canadian Environmental Protection Act, and soil contamination over this concentration represents a legal contravention.

In closing, an additional 32 sites of potential concern (contamination and/or physical hazard) in the community of Fort Albany First Nation and its' surrounding area have been identified and mapped utilizing TEK. It remains to be ascertained whether these sites are of any real concern to the people of Fort Albany First Nation.

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References

Colorado, Pam

1988 Bridging Native and Western Science. *Convergence* 21:49-67.

Doubleday, N.C.

1993 Finding Common Ground: Natural Law and Collective Wisdom, in J.T. Inglis (Editor): *Traditional Ecological Knowledge: Concepts and Cases.*

Environmental Sciences Group

1999 *Mid-Canada Line 1998 Site Assessment/delineation.* Kingston, Ontario: Royal Military College.

1998 *Environmental Assessment Plan for 15 Mid-Canada Radar Sites in Ontario.* Kingston, Ontario: Royal Military College.

Fergusson, M.A.D. and F. Messier

1997 Collection and Analysis of Traditional Ecological Knowledge about a Population of Arctic Tundra Caribou. *Arctic* 50:17-28.

Gibson, K.M.

1993 *Abandoned Radar Sites Mid-Canada Radar Line Site Investigation August 9-11, 1993.*

Johannes, R.E.

1978 Traditional Marine Conservation Methods in Oceania and Their Demise. *Annual Review of Ecology and Systematics* 9:349-364.

Langstaff, K.E.

1998 *Phase 1 Environmental Site Assessment of Old Fort Albany Diesel Generating Station (Final Draft).*

Russell, W., D. McShane and T. Dewache

1995 *Draft Translation of "Ecole Residentielle D'Albany Reflexons Historiques (1944-1991)".* Fort Albany, Ontario: self.

Tsuji, Leonard J.S.

1996 Cree Traditional Ecological Knowledge and Science: A Case Study of the Sharp-tailed Grouse, *Typanuchus Phasianellus Phasianellus. Canadian Journal of Native Studies* 16:67-79.