Phase I & II Environmental Site Assessment

Former Military Site
Snag - Enger Lakes
Mile Post 1189 Alaska Highway
(DIAND Site 36)

Prepared for:

Arctic Environmental Strategy - Action on Waste
Indian and Northern Affairs Canada
Whitehorse, Yukon

Prepared by:

Hycal ENVIRONMENTAL SCIENCES LTD.

November 1996

EXECUTIVE SUMMARY

Hycal Environmental Sciences Ltd. was retained by Action on Waste, Arctic Environmental Strategy, Indian and Northern Development, Canada to carry out an environmental assessment of a former military site, known as "Site 36" or Snag - Enger Lakes, in the western Yukon Territory.

The purpose of the investigation was to gather preliminary information on the site in order to determine whether further site assessment or remediation is required and to make recommendations on future assessments or remediation, where necessary. Previous reports indicated that debris was present on the site and there was the possibility of some environmental concerns related to the property.

Due to conditions at the site, the investigation was limited to two tasks:

1. Historical Site Assessment
   A history of the site was developed to provide an understanding of the past uses of the site and adjacent properties, to identify conditions or events which could have adversely affected the site, and to facilitate site location, inspection, and sampling.

2. Site Inspection
   The site was visually inspected.

Results of the investigation suggested that the clearing at MP 1189 was the site of dumping from at least the 1960's until recently. Aerial photographs from 1948 suggested that the site may have been in use at that time.

Investigation of this site was severely limited as the site has been bulldozed over and covered with a thick layer of fill material preventing visual inspection of the actual surface of the dump, geophysical investigation through magnetic methods, and useful soil sampling. The investigation did not, therefore, identify any specific concerns with the site other than its reported historical use as a dump.

Given the depth of fill overlying the site, further investigation of the site would be limited and somewhat problematic. Installation of leachate monitoring wells might be used to determine whether there is any leachate associated with previous activities at the site.

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1. INTRODUCTION

1.1 Project Background

This investigation was carried out as part of investigations of abandoned waste and disposal sites throughout the Yukon by Action on Waste, Arctic Environmental Strategy, Indian and Northern Development, Canada. These sites were associated with activities such as exploration, mining, industrial and military operations.

The purpose of the investigations was to gather preliminary information in order to determine whether further site assessment or remediation is required and to make recommendations on future assessments or remediation, where necessary. A primary objective was to determine whether contaminants are present on the site, and if they are, whether they are migrating from the site. A secondary objective was to identify physical hazards. If contaminants were identified on the site, a preliminary risk assessment was to be carried out to determine the degree of risk to humans or the environment in general.

Hycal Environmental Sciences Ltd. (Hycal) was retained by Action on Waste, Arctic Environmental Strategy, Indian and Northern Development, Canada to carry out environmental assessment of four separate sites. This report outlines the investigation of one of these sites, known as "Site 36". Site 36, also known as Snag - Enger Lakes is located in the western Yukon Territory, at Mile Post 1189 of the Alaska Highway (Figure 1).

Limitations of the investigation are presented in Appendix A.

1.2 Previous Investigations

Only one previous investigation which discussed the subject site was identified. Two pages from the Environment Canada Identification and Verification of Active and Inactive Land Disposal Sites in the Yukon Territory recorded a covered dump at MP 1189.

Figure 1. Site Location.

2. SCOPE AND METHODOLOGY

2.1 Site Location and History

A review of records of previous investigations, aerial photographs, and historical material from the Yukon Archives, and interviews with area residents and the local wildlife officer were used to determine the possible location and history of the site. Investigator from Hycal then proceeded to the approximate area of the site and carried out a site reconnaissance.

2.2 Site Reconnaissance

Site reconnaissance was carried out by Hycal in September and October 1996 to determine:

- the precise location of the subject site;
- the aerial extent of the subject site;
- vegetative and topographic considerations in planning a sampling program and geophysical investigation;
- surficial evidence of site occupation; and
- a local wildlife and vegetation inventory.

The initial site reconnaissance was carried out during a period of "fall weather" prior to snow covering the subject site. At this time, site visibility was good with only minor obscuring of some ground surface by deciduous leaves which had fallen from some trees. A second reconnaissance was carried out after snow covered the subject area.

3. INVESTIGATION RESULTS

3.1 Site Location and Description

Mile Post 1189 of the Alaska Highway is located north of the junction of the Alaska Highway and the James Trail, which runs to the old townsite of Snag (Figure 2). The location is approximately 13 miles south of the town of Beaver Creek.

A review of aerial photographs of the area revealed a clearing in the area of MP 1189 in 1948 (Figure 3). This suggests that the subject site may have been in some sort of use (for dumping or other activities) at this time.

A search of historical records at the Yukon Archives failed to yield any information about a site (military or otherwise) at MP 1189, other than a brief report by Environment Canada. The Environment Canada files (Appendix B) indicated that the subject site was already covered and was closed at the time of its inventory as a dumping site. It noted that the site was bulldozed over and was visible from the highway.

Interviews with local residents and officials provided little information on the subject site. While the interviewees easily recalled dumping activities in the along the Snag Road, some distance to the north of the subject site, only one interviewee recalled a dump site in the subject area. Jim Cook, of the Koidern River Lodge, reported that a dumping area had been present at MP 1189, just northwest of the campground by the Snag turnoff from the early 1960's until "several years ago". He reported that the area had been bulldozed over and consisted of a clearing directly adjacent to the Alaska Highway.

The investigators proceeded to the location indicated by Mr. Cook, the aerial photographs and the Environment Canada files.

It was discovered that the clearing at MP 1189 had been covered by at least 3 metres of fill material. The area was flat and there were no surface indications of what might lie below the fill (Photograph 1). The depth of the fill precluded geophysical investigation for shallow buried metal. It also precluded the usefulness of soil sampling to indicate the presence of soil contamination associated with former dumping activities.

The area around the clearing was visually inspected and no indications of previous occupation were discovered. The area was found to east of a small lake. Groundwater flow from the site would be anticipated to be towards the lake.

Copies of this map may be obtained from the Geological Survey of Canada, Ottawa

Figure 2. Detailed Site Location.

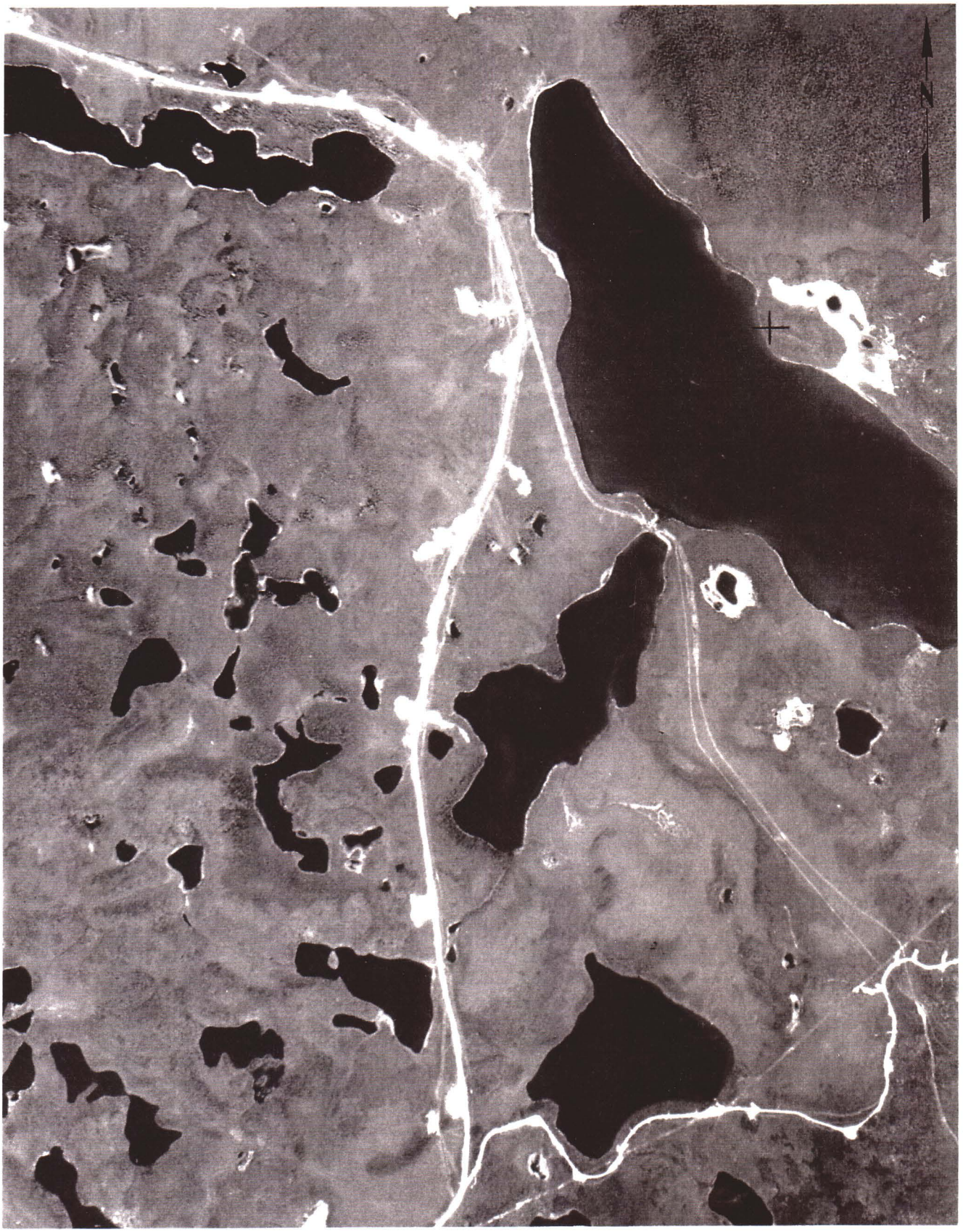

Figure 3. Aerial Photograph of Subject Site, 1948. (115 K 40 A 11452-147)

The area within two miles of MP 1189 was visually surveyed and no other area that might have been used for dumping was discovered. The local First Nations was contacted through the investigation's field assistant, in a further attempt to identify other possible locations in the area of MP 1189, but no other location came to light through this process. A review of aerial photographs of the area also failed to identify additional possible dump locations at MP 1189.

3.2 Conclusions and Recommendations

Results of the investigation suggested that a clearing at MP 1189 was the site of dumping from at least the 1960's until recently. Aerial photographs from 1948 suggested that the site may have been in use at this time.

Investigation of this site was severely limited as the site has been bulldozed over and covered with a thick layer of fill material preventing visual inspection of the actual surface of the dump, geophysical investigation through magnetic methods, and useful soil sampling. The investigation did not, therefore, identify any specific concerns with the site other than its reported historical use as a dump.

Given the depth of fill overlying the site, further investigation of the site would be limited and somewhat problematic. Installation of leachate monitoring wells might be used to determine whether there is any leachate associated with previous activities at the site.

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APPENDIX A
LIMITATIONS

LIMITATIONS

The information and data contained in this report, including without limitation the results of any sampling and analyses conducted by or for Hycal Environmental Sciences Ltd. (Hycal) pursuant to Hycal's engagement, have been set forth to the best of Hycal's knowledge, information and belief.

Although every effort has been made to confirm that all such information and data is factual, complete and accurate, Hycal makes no guarantees or warranties whatsoever, whether expressed or implied, with respect to such information or data and accept no responsibility for any loss or damage arising therefrom or related thereto.

Any use which a third party makes of this report, any reliance on or decisions to be made based on it, are the responsibility of such third parties. Hycal accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The conclusions and recommendations provided in this report are derived from information gathered from the sites identified in the report. They include Hycal's best judgments based on experience and in compliance with accepted investigative techniques. Hycal shall not by the act of issuing this report be deemed to have represented thereby that any sampling and analyses conducted by them have been exhaustive, and persons relying on the results thereof do so at their own risk.

APPENDIX B
PREVIOUS WORK

LIST OF DOCUMENTS

Document 1. Environment Canada (1983) information sheets on the subject site.

36 Kilometre 1189

Environment Canada
Environmental Protection Service

Site Code 104
NTS Sheet 115 K/2
Dry Creek

IDENTIFICATION AND VERIFICATION OF ACTIVE AND INACTIVE LAND DISPOSAL SITES IN THE YUKON TERRITORY

Community Landfill — Presently in use no

Community Name near Snag turnoff — Region Western Yukon

1.0 LOCATION Mile 1189 Alaska Highway

1.1 Latitude N 62°14'30" Longitude W 140°41' Elevation 830 M.

1.2 Distance from disposal area to townsite N.A km.

1.3 Distance from disposal area to town water source N.A km.
Is there any chance of contamination? minimal 10

1.4 What type of water source N.A

1.5 Population served by water source N.A 10

1.6 Distance from disposal area to major surface water 300m Enger Lakes. 5

1.7 Uses of major surface water recreation, boating 7

1.8 Distance to nearest house N.A.

1.9 Surrounding land use:

1/4 km radius	1/4 - 1 km radius	Beyond 1 km radius
Alaska Highway campground	junction to Snag bush	Residential — Commercial —

2.0 DISPOSAL SITE CHARACTERISTICS

2.1 Dimensions: Length 25 meters Width 10 meters 10
Approximate depth of waste 0-3 meters

2.2 Present condition:
Open ____
Covered yes details ____
Other ____ specify ____

2.3 Source of waste public, U.S. Army perhaps

2.4 Types of waste:
Liquid sewage no Garbage biodegradable no
Non degradable (appliances, car/truck bodies, metal scrap) no
Industrial waste (specify) (oils, chemicals etc) no
Inventory of other likely wastes no 5

2.5 Operation:
Open Dump no
Open Dump with Burning no

Dump with Occasional Cover no
Sanitary Land Fill yes
Other (specify) _____

2.6 Who had access to the site during operation? Public yes
Community Services _____ Specify _____

2.7 Methods of containment for high concern wastes none

2.8 Evidence of leachate (liquids produced by garbage) YES _____ NO ✓

2.9 Leachate containment (liquids escaping from dump) YES _____ NO ✓

2.10 Evidence of methane gas or odours YES _____ NO ✓
Comments _____

2.11 Period of operation 19 N A to 19 N.A.

2.12 Mean high temperature for July 18.7 °C

2.13 General soil type gravel

2.14 Vegetation willow, black spruce

2.15 Depth to permafrost during the summer discontinuous -

2.16 Are there any sensitive environments or critical habitats such as endangered species breeding grounds in the area? NO _____ YES ✓
Specify trout in nearby lakes

2.17 How far from the landfill are they? _____ 250 m

3.0 GENERAL NOTES: ANNUAL RAINFALL - 300 mm.

3.1 Property owner: Present crown
Past (during operation) crown

3.2 Past or present problems with site can be easily seen from highway

3.3 Reason for closing or abandoning site can be easily seen from the highway

3.4 Closure procedures site appears to have been bull-dozed over

3.5 Information source and/or references Land's File of Waste Disposal Sites

4.0 COMMENTS

APPENDIX C
PROJECT PERSONNEL

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Personnel who participated in the project included:

Lisa-Henri Kirkland, B.A., B.Sc., P.Geol.	historical investigation, field sampling, data analysis and report preparation
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Alan MacDonald, M.E.Des.	report review