THE MANUAL FOR AN IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

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for:

THE METROPOLITAN TORONTO AND REGION CONSERVATION AUTHORITY

DECEMBER, 1988

Revised January 27, 1989
Revised March 14, 1989
Revised July 4, 1990 <>

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THE MANUAL FOR
AN IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

1.0 INTRODUCTION

1.1 Objectives

It is the overall objective of this manual to introduce a management system to protect the present and future environment of lakefill locations including the aquatic environment. Herein, this system is referred to as the "Improved Lakefill Quality Control Program (ILQCP)". This program will be administered by the Metropolitan Toronto and Region Conservation Authority (MTRCA).

This manual is a reference document. It outlines the process, techniques and methods to be followed to assess the acceptability and suitability of imported fill for placement at lakefill locations. To this end, Sections 1.0 through 3.0 generally describe the program and outline disposal options. Section 4.0 is a guide to industry, the potential users of lakefill locations. This section provides developers with the steps to follow in order to obtain permission to place excavated fill / soil at lakefills. Sections 5.0 and 6.0 provide MTRCA lakefill operators the framework to assess the acceptability of incoming fill / soil. Finally, Sections 7.0 through 9.0 outline the information and reporting system MTRCA staff will use to administer and audit the program.

1.2 Definitions and Responsibilities

In this manual, the operators, owners or developers of a property will be referred to as "the developer". It is understood that the developer is responsible for all activities related to the development of his / her property. Sampling and testing of a developer's property or material is the sole responsibility of the developer. It will be the responsibility of the developer to ensure that all material destined for a lakefill location must be transported directly from the excavation site. In other words, no stockpiling of material at a secondary location will be permitted without prior approval by the MTRCA.

Under the ILQCP, the classification of a site will be determined by the total volume of material to be excavated from a site. The number of loads to be transported from a site is only to be used as a guide and will not be used to classify a site under the ILQCP. In this manual, the MTRCA will apply a conversion of 10 m^3 = 1 load.

1.3 History of the Lakefill Quality Guidelines

The Open Water Disposal Guideline (Ministry of the Environment, 1976) which governs lakefill quality, is based on Ontario Water Resources Commission (OWRC) draft guidelines for the review of dredging activities and construction methods. The guideline requires that excavated material deposited at a lakefill location had to meet the Open Water Disposal Guideline for open water disposal. Material (fill or soil) which exceeded the guideline was not permitted at the lakefill locations. Until the initiation of the Improved Lakefill Quality Control Program, all material which was directed to lakefill locations has been inspected by the gate master using visual techniques. Recently, material originating in the Designated Control Area of Toronto, the central core of Toronto south of Queen Street, was required to have authorization detailing that the material was suitable for placement at the lakefill locations. However no universal system, to classify fill, for the greater Metropolitan Toronto area was in place. Consequently, the Improved Lakefill Quality Control Program has been designed to provide a consistent Metro-wide guideline for the assessment of fill quality.

1.4 The Improved Lakefill Quality Control Program

The Improved Lakefill Quality Control Program (ILQCP) is designed to protect the present and future environment of lakefill locations from environmentally unsuitable soil or fill material. The decision making process of the ILQCP takes into account the end use of lakefill sites and the surrounding aquatic environment in assessing the suitability of fill for placement.

The ILQCP enforces environmental controls on the material to be deposited at lakefill locations and allows more flexibility for the developer with regards to disposal options. In addition, pre-disposal inspection of sites undergoing development requires the developer to identify previous waste generators and the chemical nature of excavated material prior to acceptance at a lakefill location. This information will be used by the MTRCA to assess the acceptability of material and the appropriate placement location at the lakefill.

The ILQCP is designed as a tool to be used in conjunction with good judgment and past practical experience in the handling and disposal of material at lakefill locations.

2.0 DETAILS OF THE IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

2.1 System Dynamics

As previously stated, the program is designed as a decision-making framework for assessing the acceptability of excavated material for placement at lakefill locations. It is designed to inform the developer (applicants) if and where the excavated material may be placed in the lakefill (i.e., lakefill location or a land disposal facility).

The ILQCP requires that developers with sites producing 200 m^3 or more of fill (Large Sites) complete an application which includes a site history audit and a series of chemical tests prior to initiation of site excavation activities. Developers producing excavation volumes smaller than 200 m^3 (Small Sites) will not be required to complete chemical testing or a site history audit but must complete a lakefill application prior to the material being considered for placement at a lakefill facility. The Authority staff must perform a site inspection for all such applications. The Authority reserves the right; however, to request chemical testing for any Small Site. Section 4.1 details the site size classifications. All completed applications are to be presented to the MTRCA prior to the initiation of the excavation so that the MTRCA can identify an environmentally safe disposal option at a lakefill location for the excavated material without causing unnecessary project delays. Table 1 summarizes the classifications of sites. <>

The ILQCP and the decision framework which developers must proceed through, from obtaining the application form from the MTRCA to the final placement of the material, is illustrated in Figure 1. This manual discusses the various aspects of the ILQCP, as detailed in Figure 1, and how it relates to activities at the lakefill location. Figure 2 details the chemical test procedures that are required to classify fill material with respect to the selection of the appropriate disposal option within a lakefill. This figure also contains the chemical testing and decision framework for all possible disposal options, including both land and lakefill. The steps that make up Figure 2 are part of the 'SITE HISTORY AUDIT & CHEMICAL TESTING' step in Figure 1.

As illustrated in Figure 1 and Figure 2, the steps involved to execute the ILQCP for material placement are as follows:

LARGE SITES:

1. Registration of site by the developer with MTRCA to obtain Application for Bills of Lading.

2. Conduct site history audit.

3. Site investigation and site sampling.

4. Lakefill Bulk Chemical Analysis of site soil / fill samples.

5. Comparison of Lakefill Bulk Chemical Analysis results with Open Water Disposal Guidelines (Appendix A).

6. **IF** Lakefill Bulk Chemical Analysis results meet Open Water Water Disposal Guidelines **THEN** Open Water placement may be possible **OR,**

7. **IF** Comparison of Lakefill bulk analysis does not meet Open Water Disposal Guidelines **THEN,** compare with Restricted Land Use Guideline (Appendix B).

8a. **IF RESULTS LESS THAN** (or meets) Restricted Land Use Guideline **THEN** Distilled Water Leach Analysis of Site Samples must be completed and compared to the Drinking Water Guidelines (See Appendix C) to identify the appropriate lakefill disposal location (See Figure 2).

8b. **IF RESULTS EXCEED** Restricted Land Use Guideline, **THEN** a Regulation 309 Leachate Extraction analysis may be required to identify a suitable disposal option.Disposal of such material will be subject to the guidelines set forth in the Environmental Protection Act Part V; Regulation 309.

9. Completion of Application including site history audit and chemical analysis results if ILQCP Guidelines have been met.

10. Submission of Application to MTRCA

11. Confirmation and review of chemical testing results by MTRCA.

12. Decision by MTRCA on environmentally safe lakefill disposal location.

13. Excavation and disposal of material in approved location as authorized on Bills of Lading.

SMALL SITES:

1. Registration of site by the developer with MTRCA to obtain Application for Bills of Lading.

2. Completion of Application (site history & chemical analysis may be required)

3. Submission of Application to MTRCA.

4. Confirmation and review of application by MTRCA

5. Site inspection by MTRCA staff.<>

6. Decision by MTRCA on suitability for lakefill disposal.<>

7. Excavation of material if approved.

8. Bills of Lading issued for sites conditionally accepted.

9. Disposal of material in "confined" lakefill location as authorized by the MTRCA after gate inspection by lakefill staff.

At the lakefill location, trucks arriving from all sites will be subject to a visual inspection before access is granted to the facility. The vehicles from Large Sites will have Bills of Lading which will show the Gate Inspector that the material has been inspected and is conditionally suitable for lakefill placement. Small Sites will be accepted to the lakefill location on a load by load basis only depending on the gate inspection. These steps are outlined in Figure 1. <>

2.2 Regulatory Requirements And Policies

All material proposed for lakefill must meet the regulatory standards and policies set forth by the governing agencies which have jurisdiction at the lakefill facility. It is expected that the Program Guidelines will change through time and the regulatory standards and policies which are to be used will be those that are current. Consequently, the developer should be aware of all updated policies and regulations. The decision of the MTRCA will be final as to the application of the regulations and policies to the lakefill program and are not restricted to the limitations imposed by the ILQCP. Once granted access to a lakefill location, all excavated material proposed for placement will be directed to an appropriate location, on the basis of the results of the required tests and inspections as discussed in Sections 4 and 5.

2.3 Lakefill Disposal Options

Subject to availability, the following classifications are a list of potential lakefill location deposition options or areas.

2.3.1 Open Water

Open water disposal may be permitted if the quality if the proposed lakefill material meets the Open Water Disposal Guideline (Figure 2 and Appendix A).

2.3.2 Protected Lakefill

Protected lakefill disposal may be permitted if the concentration of chemical constituents in the material exceed the Open Water Disposal Guidelines, but meet the Restricted Land Use Guidelines, and the results of a Distilled Water Leach Analysis meet the Drinking Water Guidelines (Figure 2 and Appendices B & C). Protected disposal requires that the area of deposition is enclosed by a minimum of three sides of land which are above the high water mark and such that the waterline outline is in a shape similar to that of a semi-circle or closed horseshoe. The protected environment must be designed such that the area of filling is not exposed to the predominate wave action at the lakefill location.

2.3.3 Confined

Confined lakefill disposal may be permitted in areas where there is no direct contact with water, if the concentration of chemical constituents in the material exceed the Open Water Disposal Guidelines but meet the Restricted Land Use Guidelines, and the results of a Distilled Water Leach Analysis exceed the Drinking Water Guidelines (Figure 2, Appendices B & C). Confined disposal areas must be above the 100 year flood level(75.7 meters geodetic) and not less than 15 meters from the shoreline. <>

2.3.4 Land

Land Disposal may be permitted if the quality of the material exceeds the Open Water Disposal Guidelines and if the quality of the material exceeds the Restricted Land Use Guidelines. This material will be referred to as an unknown waste until analysis review classifies the waste under the guidelines of Regulation 309(1) and identifies the disposal options available. If such a situation occurs then MOE land disposal guidelines must be followed. Authorized landfill locations can be obtained from the MTRCA by calling 416-392-9725.<>

3.0 LANDFILL DISPOSAL OPTIONS

This section details potential material classifications to be addressed by developers should excavated material not be suitable for lakefill placement. For material classified for land disposal, it is recommended that the developer contact their district Ministry of the Environment office for advice on environmentally suitable techniques for excavation and disposal options.

3.1 Waste Classifications

For land disposal all material must be categorized under the guidelines outlined in the Environmental Protection Act Part V; Regulation 309.

(1) Government of Ontario, 1974, "Environmental Protection Act", Revised Regulations of Ontario, 1980, Chapter 141,S.137, 1984, Pt. 1X, 1985, R.R.O. 1980, #309; OREG 322/85, 464/85.

3.1.1 Inert Fill

Under the guidelines set forth in the Environmental Protection Act Part V; Regulation 309: "Inert fill" means earth or rock fill or waste of similar nature that contains no putrescible materials or soluble or decomposable chemical substances. "Inert fill" is exempt from Part V of the Environmental Protection Act and Regulation 309". This material may be disposed of in any suitable location.

3.1.2 Non Registerable Solid Waste

Under the guidelines set forth in the Environmental Protection Act Part V; Regulation 309: "Non Registerable solid waste is a waste in which the concentration of solutes leached according to the Extraction Procedure specified in Regulation 309 is less than 10 times the concentrations specified in Schedule 4 of the Regulation". Waste which meets this Guideline can be disposed of at a suitable location. The Ministry of the Environment should be consulted when defining a suitable location.

3.1.3 Registerable Solid Waste

Under the guidelines set forth in the Environmental Protection Act Part V; Regulation 309: "Registerable solid waste means a waste which is not a hazardous waste but is a waste which produces leachate contaminant concentrations between 10 and 100 times the concentrations specified in Schedule 4 of Regulation 309 using the Leachate Extraction Procedure or equivalent method approved by the Director". A waste which qualifies for this category must be disposed of at a registered landfill.

3.1.4 Leachate Toxic Waste

Under the guidelines set forth in the Environmental Protection Act Part V; Regulation 309: "Leachate Toxic Waste means a waste which produces leachate containing any of the contaminants listed in Schedule 4 at a concentration in excess of 100 times that specified in the Schedule using the Leachate Extraction Procedure or equivalent method approved by the Director". A waste which qualifies for this category must be disposed of at an approved waste disposal facility.

4.0 INSTRUCTIONS TO DEVELOPERS ON HOW TO USE THE IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

The ILQCP will commence October 3, 1988. The program will have a phase in period of three months. On January 1, 1989 all procedures and regulations outlined in this manual will come into effect.

Prior to January 1, 1989, Large Sites will be defined as those producing greater than 2000 m^3 or 200 loads of material. Small Sites, Group A will denote sites producing 50 m^3 (5 loads) to 2000 m^3 (200 loads) (Table 1). After January 1, 1989 the volume classifications listed on Table 1 come into effect.

This manual focuses on the categories and classifications in effect after January 1, 1989. The only difference between the system dynamics prior to January 1, 1989 and after, is the Large Site classification.

Developers proposing to excavate material for placement at a lakefill facility must complete a pre-disposal assessment of the total volume projected to be removed. After January 1, 1989, sites which will produce 200 m^3 or more, or approximately 20 loads will be defined as Large Sites. Developers whose sites will supply less than 200 m^3 will be classed as Small Sites.

For Large Sites, a pre-disposal inspection Environmental Report will be required with all Applications for the Bills of Lading which will grant access to the lakefill locations. To this end, the developer must complete a site history and a sampling and testing program which is contained in the Environmental Report, before the MTRCA will review the application for Bills of Lading. Developers of Small Sites must complete an Application for Bill of Lading and the Authority must inspect the excavation site before the application is approved or rejected.

4.1 Site Classifications

4.1.1 Small Sites

Small Sites are classified as sites or activities which will produce under 200 m^3 of material. Small Sites must submit an application to the MTRCA 5 working days before site activity is to commence to avoid delays in the initiation of site activities. This 5 day period will allow MTRCA staff time to inspect the excavation site. The site inspection will take into account the

present and past land uses as well as any other indication of POSSIBLE environmental concern. <>

The volume selected by the user in registering the site must represent the total volume anticipated to be excavated or removed from the site and directed to a lakefill location. This volume, once registered will not be adjusted or revised to a greater amount and can not represent a phase or section of a multi phase development or excavation site. The volume registered must also be the total for all material proposed for placement at all lakefill locations and not a time or location distributed subtotal (eg. 40 load total: 20 loads to lakefill location A and 20 loads to lakefill location B). If the total volume reaches 200 m^3 during the excavation, then the MTRCA will require an environmental report prior to the continued acceptance of material at the lakefill location (Table 1).

Small Site haulers who consistently violate the Bills of Lading authorization may have the Bills of Lading cancelled by the MTRCA without prior notification and access to the lakefill location denied until the developer corrects the situation and the MTRCA is satisfied that the violation will not be repeated. Fines subject to the Environmental Protection Act, Conservation Authorities Act and the Criminal code will be applied to all developers who attempt to violate the ILQCP procedures or regulations (See Section 8).

4.1.2 Large Sites

All sites which produce greater than or equal to 200 m^3 of material will be classed as Large Sites. These sites will require an application which includes a pre-disposal inspection environmental report before the Bill of Lading is released (see Section 4.5). Large Sites must be registered with the MTRCA in advance of the proposed site activity start date so that delays will not occur. When registering, the developer must submit the application and Environmental Report to the MTRCA. The Application will be not processed if the Environmental Report submitted is not complete or does not contain the information required for the MTRCA to process it. Section 4.5 details information required in the Environmental Report.

If the Environmental Report states that the site contains material which is not acceptable for a lakefill location, then the district Ministry of the Environment office will be notified immediately, so that an appropriate disposal location can be identified.

The Bill of Lading for a Large Site will be the only document which will permit access to the lakefill location for disposal of material. The Bill of Lading will inform the developer that the proposed excavation material is acceptable for placement at one of the three zones at the lakefill location. It will inform the lakefill location Gate Inspector that the truck at the gate is carrying material suitable for his facility. This document will not be accepted if the load being presented at the lakefill location does not correspond to the application description for material acceptability. The decision of the gate inspector will be final. The gate inspector in concluding that the Bill of Lading is unacceptable, will complete a written Lakefill Location Soil Acceptability Checklist (LLSAC) (Section 5.5 and Figure 5).

Large Site haulers who consistently violate the Bills of Lading authorization may have the Bills of Lading cancelled by the MTRCA without prior notification and access to the lakefill location denied until the developer corrects the situation and the MTRCA is satisfied that the violation will not be repeated. Fines subject to the Environmental Protection Act, Conservation Act and the Criminal code will be applied to all developers who attempt to violate the ILQCP procedures or regulations (See Section 8).

4.1.3 Complex Sites

Complex sites contain fill / soil on portions of the site which is unsuitable for open water lakefill disposal. These sites require independent on-site supervision to ensure that only the suitable material is transported from the site to a lakefill location and that Bills of Lading are authorized for the appropriate disposal area at the lakefill location.

4.2 Site History

Developers producing 200 m^3 of material or more; and proposing to dispose of material at a lakefill location must provide information which details the present and past land use activities back to first occupancy. It is the intent of the site history to identify types of land use and land use activities potentially responsible for environmental degradation. Typical information sources are as follows:

- archives, trade journals, 19th and 20th century engineering text books on industrial processes
- previous facility owners and operators
- plant history
- records of current processing operation
- records of previous environmental problems
- company safety records
- site engineering plans.

First occupancy is defined as the occurrence which contains the first developer to occupy a parcel of land such that the previous land use was virgin, undeveloped land. Information sources for the site history include city and provincial archives, insurance maps, assessment and approvals offices and construction or planning permits. This information must be documented and referenced in such a manner as to allow referencing by MTRCA officials.

The site history will assist present developers in identifying actual or potential environmental problems which will require corrective action. It will assist the MTRCA in directing developers to disposal locations. Most importantly the site history will assist the Environmental Consultant in choosing a suitable number and location of soil sample points.

Linear excavation sites, such as those for sewer and gas line placement, which produce 200 m^3 of fill or more will not require a site history but will require chemical testing of excavation material prior to acceptance at a lakefill location.

4.3 Sampling

4.3.1 General

Developers who are producing 200 m^3 of material or more and are proposing to dispose of site material at a lakefill location must complete a sampling program. The program must be acceptable to the MTRCA and must meet the prescribed guidelines for lakefill disposal locations. Each proposed source site must be sampled in a site specific manner at locations which will reflect the site history.

The sampling density is dependent on the previous land use and the surface area of the proposed excavation. The sample locations must be such that they represent the site conditions in a manner that all the site stratigraphy and chemical nature for all material proposed for placement at a lakefill location is known by the MTRCA.

Excavations of bedrock (eg. shale in the Toronto area) will not require chemical testing if the overburden is uncontaminated. If overburden is contaminated to depth, shale may require chemical analysis.

In collecting the samples, care should be taken to ensure all fine-grain materials are retained. Care should also be taken to ensure that the materials collected are representative of the material to be encountered in the excavation. All Ministry of the Environment standard sampling methods must be observed. All samples collected should include a replicate sample to be retained by the developers for future documentation of site conditions.

The following represents a suggested density sampling program. Alternative methods will be accepted provided the developer can demonstrate adequate areal coverage of the site to be excavated. Site histories and site specific conditions may warrant an increased sampling density. It is requested that developers use specialists experienced in such site activities, good judgment and past practical experience in preparing and completing sampling programs. The developers are encouraged to discuss with MTRCA staff sampling densities before sampling begins.<>

4.3.2 Suggested Number of Boreholes Required

1. If the area of the excavation is less than or equal to 200 m^2, a minimum of 2 boreholes, from which samples will be taken are to be drilled.

2. If the area of the excavation is greater than 200 m^2 but less than or equal to 500 m^2, a minimum of 3 boreholes are required.

3. If the area of excavation is greater than 500 m^2 but less than 1000 m^2, a minimum of 5 boreholes is required.

4. For excavation areas greater than 1000 m^2 a minimum of 8 boreholes are necessary.

Note: The above guidelines represent suggested numbers of boreholes for excavation of the specific noted areas. The location and/or final number of the boreholes should be determined by the soils consultants based on:

a) The detailed site history;
b) Location of native, surficial and fill materials on site.
c) Location of any present day potential polluter, e.g., building, storage facility, etc.

4.3.3 Suggested Number of Samples Per Borehole

Samples to be taken at least 4 depth intervals:

1. 0 to 25 centimeters
2. 25 centimeters to 1 metre
3. 1 metre to 3 metres
4. 3 metres to depth (max. 6 metres).

If however the total depth of the excavation is greater than 6 metres then 1 sample must be taken for every 5 metres thereafter. All soil types should be represented in the sampling program.

4.3.4 Linear Excavations

Recommend at least 2 boreholes per 100 m with a greater frequency required in areas where the land uses or special circumstances would warrant it.

4.4 Chemical Analysis

Samples collected and submitted for analysis to assess fill / soil suitability (relevant chemical parameters are appended in this document) must be subjected to the applicable chemical analysis. The results of the analysis will be compared to the appropriate guidelines by the MTRCA and will be evaluated as to the materials suitability for placement at a lakefill location.

The lakefill bulk analysis will be completed using a one-hour aqua regia digestion procedure to determine the concentration levels of stated parameters. Open Water placement will be authorized if the results of the analysis meet the Open Water Disposal Guidelines. The digestion is a measure of bulk composition of mobile and fixed metals and other chemical parameters. Other approved procedures such as a 4% nitric acid digestion for 24 hours will be accepted if they are registered with the MTRCA prior to initiation of testing. The Open Water guidelines are listed in Appendix A.

To access confined or protected placement at a lakefill location, a Distilled Water Leach analysis must be completed on the samples collected (Figure 2). This analysis is identical to the Regulation 309 Leachate Extraction Procedure except that distilled water is used instead of 0.5 N Acetic Acid. The results of this analysis must meet the Drinking Water Guidelines before consideration will be given for placement in a protected lakefill location (Appendix C).

The Restricted Land Use Guidelines for bulk analysis is applied at the lakefill location for determining proposed material quality as the end use for such facilities are presently proposed as parkland. The Restricted Land Use Guidelines are based on phytotoxicity (copper, zinc, nickel, chromium, silver, oil and grease and arsenic), human (lead, cadmium, mercury) and animal (molybdenum and selenium) health considerations.

The Regulation 309 Leachate Extraction Procedure will be utilized by developers or their consultants if placement in a land disposal facility is required. This will occur when the results of the Lakefill bulk analysis are compared to the Restricted Land Use Guideline and exceedances are present for any of those parameters analyzed.

4.5 Environmental Reports

All Large Sites will require an Environmental Report to be submitted to the MTRCA which will detail the conclusions of an investigation of the site conditions and make recommendations on fill disposal options. This report must contain the site history audit and chemical testing results.

A typical Environmental Report will have the following sections:

1. Introduction

This section should inform the MTRCA about the subject property, the owner / developer and the author of the report.

2. Background

This section should contain the site history audit and discuss present site conditions and activities.

3. Field Program

The field investigation will be discussed in this section detailing the sampling protocol, sampling density and analytical protocol. The results of the site history audit must be used as the rationale in the selection of the sampling density.

4. Results

This section should detail the results of the field investigation including field observations and laboratory testing.

5. Conclusions and Recommendations

This section will highlight the conclusions of the audit and field program. This section will make recommendations on environmentally safe disposal options for material to be excavated from the site.

6. Tables and Diagrams

The environmental report must contain maps or diagrams illustrating the locations of boreholes on the site. Information about materials encountered in the boreholes during drilling including their characteristics must be submitted with the report. The tables must also identify which materials were submitted for analysis.

Within the above report sections, the developer must supply the MTRCA the following information:

1. Project name
2. Address of site
3. Proponents name and address
4. Site plan including location of soil sample sites
5. Borehole logs (including elevations)
6. Soil analysis results (physical and chemical), including laboratory certification sheets <>
7. Name and address of company which completed soil sampling
8. Name and address of company which performed soil analysis
9. Volume and type of fill or soil on the site and recommended disposal locations (including the volume of fill unsuitable for lakefill)
10. Site history audit

4.6 Evaluation of Environmental Reports

The review of chemical testing results and submitted Environmental Reports and recommendations will be completed by the MTRCA or by an official so designated by the MTRCA. The evaluation processes will consist of a comparison of chemical testing results with

approved guidelines and an assessment of the interpretation of the results as to their application in the ILQCP. The analytical results will not be the sole criteria used by the MTRCA in assessing the acceptability of the material. The decision of the MTRCA will be final and is not restricted to the limitations imposed by the Lakefill Quality Control Program. Therefore, the MTRCA have discretionary decision making power based on past experience and professional judgment.

If the application is successful then Bills of Lading will be issued to the applicant with the appropriate instructions regarding excavation and transport procedures. The Bills of Lading authorize the applicant to place the excavated material at a lakefill location. Each Bill of Lading will be specific as to which of the three areas of placement in the lakefill location the fill may be deposited (confined, protected, Open Water). Applications that do not meet the lakefill placement guidelines will be required to proceed with the appropriate methods to identify alternative land disposal options. The district Ministry of the Environment office will be notified by the MTRCA of all sites which contain material that is not suitable for lakefill.

If the Environmental Report identifies a site in which a portion or section of the site is not suitable for lakefill then the site will be classed as complex. Complex sites will be allowed to supply the lakefill quality material to a lakefill location only if a specialist on the site conditions supervises the excavation. This specialist will be responsible for authorizing that each vehicle leaving the site for a lakefill location is carrying material as registered on the Bill of Lading.

The developer, when submitting the Application, must register the specialist with the MTRCA and submit a site plan outlining the volume and location of material suitable for lakefill. This plan must account for all disposal options for all material proposed for the site excavation and the tentative excavation dates for each area.

If material arriving at a lakefill location from a complex site is found to be unsuitable for lakefill, the load will be refused access and the developer and the Ministry of the Environment will be notified of the situation immediately. The developer will have all Bills of Lading cancelled until the situation is corrected and the MTRCA is assured by the developer it will not be repeated.

4.7 Chemical Testing Laboratories

The evaluation of chemical testing results of the sampled proposed lakefill material will only be completed on those samples that were analyzed by laboratories listed with the MTRCA. The MTRCA will provide this list to developers upon request. Developers must only use those laboratories authorized for such work so that there will be no delay in identifying potential disposal locations.

5.0 INSPECTION TECHNIQUES

When excavated material arrives at the lakefill location, the MTRCA location inspector will conduct an examination of the load to ensure that the material quality meets the official registration quality documented on the bill of lading. The inspections will follow the lakefill location Soil Acceptability Checklist (LLSAC) (Figure 5) so that a complete information package on the potential lakefill material will be available and the MTRCA gate inspectors will be able to make the most appropriate environmental decision as to the suitability of the material (Figures 1 and 2). Since Large Sites will have completed applications and site histories, they will have bills of lading to confirm load suitability for the lakefill location.

Gate inspections will be more detailed on the loads originating from Small Sites (less than 20 loads or 200m^3) entering the lakefill location as a site history and chemical analyses may not have been completed prior to arrival at the lakefill location. Visual inspection as well as an odour identification will be completed on all loads and monitoring equipment will be used on the small load site materials to identify the presence of volatile components. Small Site materials may only be disposed of in confined areas at a lakefill location. All suspect material from Large Sites will be refused access to lakefill locations. A Bill of Lading does not guarantee access to a lakefill location.<>

All inspections will be documented and the standard LLSAC completed prior to the assessment of a load's suitability as lakefill material. The decision of the MTRCA official will be final as to the acceptability of proposed material to the lakefill location.

5.1 Visual

All lakefill location Gate Inspectors will conduct visual inspections of all loads entering the lakefill location. It will be the responsibility of the lakefill location Gate Inspector to judge that the proposed material is visually suitable for placement at the lakefill location.

The inspector will use the Environmental Report in conjunction with good judgment and past practical experience in assessing the acceptability of the material. The LLSAC will be completed to document the soil quality if it becomes suspect. Identifiable features will be noted, such as:

1. Evidence of oil or other potential contaminant, e.g. paint, scrap metal, etc.

2. Particle size, texture, colour

3. Particle composition, e.g. presence of ash, cinders, wood fragments, etc.

5.2 Odour

Lakefill Gate Inspectors will complete an investigation of potential lakefill material for the presence of odours. Many samples, while not exhibiting a visual feature which can identify the material as unsuitable for lakefill, may emit an odour (eg. usually high levels of oil and grease can be identified by smell at distance from a sample location). Odours which can be detected at distance will be analyzed with monitoring equipment prior to attempting detailed physical inspections. All loads will be documented in the LLSAC for the presence of odours. Odours which are not identifiable will be assessed through the site history or with the assistance of the other inspection techniques prior to accepting the load to the lakefill location.

5.3 Monitoring Equipment

Location officials may use all available monitoring equipment on loads which are of a questionable quality. Equipment proposed for use at a lakefill facility will be mobile and hand held which will allow inspectors to access material without difficulty at the lakefill location or at the excavation site.<>

5.4 Sampling Suspect Material

The MTRCA site staff are not responsible for the sampling or testing of suspect material and the MTRCA will not sample material at the gate or visit a site to conduct any sampling at the request of a

developer. Sampling and testing of a site is the sole responsibility of the developer. The MTRCA regularly audits job sites and loads transported and will sample random loads to confirm status of applications and quality of lakefill being transported. MTRCA staff will visit excavation sites periodically to monitor the site activities and suitability of the excavation material as lakefill.

If material originating from a site becomes suspect after visual and odour inspections, it will be denied access to a Lakefill facility. If a load is rejected then the excavation site will be recorded as a source of unsuitable material and the appropriate MTRCA and district Ministry of the Environment officials notified of the situation. The MTRCA will not accept any suspect material and will refuse or cancel the Bills of Lading for any site supplying such material. The developer will be notified immediately by the MTRCA of the situation and must correct the situation before any material is accepted from the site at a lakefill location.

5.5 Record Keeping

Lakefill location inspectors will monitor each load entering the Lakefill facility to confirm that the material continues to meet the quality standards set forth by the regulations and the MTRCA in the Bill of Lading application. For Small Sites, every load will require a detailed inspection given that a pre-disposal assessment has not been carried out. The LLSAC (Lakefill Location Soil Acceptability Checklist) will be followed as it assists inspectors in standardizing on-site records and decision-making processes. The LLSAC is a systematic checklist which will create a uniform quality assurance system for all lakefill locations and a standard field inspection method for lakefill location inspectors.

The data required for the MTRCA Lakefill Quality Information System (LQIS) (See Section 7.0) will also be collected and maintained so that the MTRCA information system is correct and up to date. The information collected on the LLSAC for suspect loads or problem contractors will be stored for future use and forwarded to the Ministry of the Environment so that lakefill location staff and Ministry officials will be aware of potential problems or situations which will require a greater level of monitoring or inspection.

6.0 ON-SITE DECISION MAKING

MTRCA officials at the lakefill location have the final decision on the acceptability of proposed material for placement at the site. The MTRCA official will act to restrict or refuse access to the facility, if material arriving at the gate from an approved site does not conform to the quality standards

that are required for lakefill placement or does not appear to be similar to the material registered in the Application.

Small Sites will be subject to the more detailed gate inspection procedures and will require more on-site decision making than the Large Sites. Officials making the decisions will compensate for the potential of contaminants which may not be visually identifiable. That is, truck loads which may visually appear to be suitable for lakefill may not be granted access to the lakefill location **if reasonable suspicion of contamination exists.** Since LLSAC will be completed detailing the gate inspectors' decision, the MTRCA will have a record of the occurrence for further action or discussion. In all situations, the lakefill location gate inspector's decision is final.

7.0 LAKEFILL QUALITY INFORMATION SYSTEM

The ILQCP uses a Lakefill Quality Information System (LQIS) to record, monitor and audit all information submitted on the Application for Bill of Lading. The Bill of Lading provides a base for monitoring all daily site activities and material being deposited at all lakefill locations. The information contained on the Bill of Lading and Application will be used daily to confirm the environmental quality of all material entering the lakefill locations. Section 7.2 reviews the Application Form and 7.3 the Bill of Lading.

7.1 Objectives of the Lakefill Quality Information System

The Lakefill Quality Information System (LQIS) is a computerized system designed to provide a data base to the MTRCA which will supply "Real Time" audits of applications. The System will also provide summaries of each days activities at each lakefill location and each job site.

By keeping a detailed data base, the MTRCA can maintain a complete record of soil movement in their jurisdiction and provide inspectors with up-to-date information on problem developers and sites. This will assist inspectors on taking action on problem sites. All information contained in the LQIS will be forwarded regularly to the Ministry of the Environment.

7.2 Application for Bill of Lading

The Application for Bills of Lading will be completed by all developers who propose to deposit material at lakefill locations. Figure 3 is an example of an Application form. All the applicable form blanks must be filled in by the applicant. Any application which is not complete will be returned to the developer and a new application submitted. The minimum amount of time required for an application to be submitted prior to the initiation of site activities is listed on Table 1.

Any information which is knowingly incorrect or misleading which is written on or submitted with the application information (eg. the Environmental Report), will result in immediate cancellation of all Bills of Lading presently in the possession of the offending developer. The applicant and developer will then be prosecuted to the full extent of the law and will be denied access to any lakefill location until the situation is resolved to the satisfaction of the MTRCA.

7.3 Bills of Lading

The Bill of Lading will be the only article which will identify a vehicle as having access to a lakefill location to dispose of material. As noted before, the Bill of Lading does not guarantee that the load will be granted access to the lakefill location. Figure 4 is an example of a typical Bill of Lading. Each Bill of Lading is site specific and can not be transfered from one site to another site, one developer to another or from project to project. Bills are individually numbered and coded so that each Bill of Lading is unique and can be traced by the MTRCA.

The person transporting the lakefill material will be responsible for ensuring that the material being hauled by his vehicle has originated from the project address listed on the Bill of Lading. The developer or his representative will be responsible for ensuring that the information on the Bills of Lading is correct. Both parties ("hauler" and "dispatcher") will sign the declarations on the Bills of Lading to authorize that the load of material arriving at the lakefill location has originated from the site indicated on the Bills of Lading and that the "dispatcher" and the "hauler" are fully aware of the contents of the vehicle. Any Bills of Lading for a site which are not signed or is missing any information will not be accepted and the hauler will not be permitted until this situation is corrected.

Each Bill of Lading will have the day and time that the load left the site and the vehicle plate number recorded on it by the "dispatcher". If a vehicle arriving at a lakefill location presents a Bill of Lading that contains information that is inconsistent with that which is expected for the site of origin (eg. the vehicle plate number is incorrect or the transport time from the site to the lakefill location is not consistent with that expected), the load may be denied access to the lakefill location.

When arriving at the lakefill location, the hauler must present the Bill of Lading to the gate inspector.

If any load is denied access to a lakefill location, a LLSAC will be completed and the Ministry of the Environment notified. Any attempt to hide or cover information contained on a Bill of Lading, alter or reproduce a Bill of Lading will result in prosecution by the MTRCA to the full extent of the law.

8.0 AUDITS OF THE IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

The MTRCA will audit all aspects of the ILQCP daily. The audit procedures will include site visits, inspecting trucks, random chemical testing and Application reviews. Developers will not be given any information as to the time or location of an audit and may not be informed that one has been completed.

Audits will supply the MTRCA with a quality control summary of the activities of developers and sites. Sites which are considered complex in nature will be subject to increased supervision due to the site conditions.

The MTRCA will audit sites of all classifications to monitor the suitability of the material being transported to the lakefill locations.

If an audit or standard inspection identifies a situation which is in violation of the ILQCP, then access to the lakefill location will be denied and the Ministry of the Environment will be notified immediately and the Prosecution of violating developer will be initiated under all applicable Acts and Codes.

9.0 REPORTING

In addition to the rejected load reports (LLSAC), the MTRCA shall submit a summary of activities to the Ministry of the Environment on regular intervals. Every month the MTRCA will submit this report to the Director of the Central Region of the Ministry of the Environment. This report will contain information on the activities of all sites and lakefill locations. It will detail:

1. The volume of material received from Large Sites which was acceptable for the three areas of filling (open water, protected, confined).

2. The volume of material accepted from Small Sites.

3. i) Volume of material rejected
   ii) Site location of the source of the rejected material
   iii) The basis for the rejection
   iv) The Developers Application and Information package

The MTRCA will provide the Director of the Central Region of the Ministry of the Environment a report at the end of each year which will summarize the monthly reports.

Table 1

Developer Classifications in the Improved Lakefill Quality Control Program

Site Size	Volume of Material	Information Required by MTRCA to Process Application	Minimum Working Days Prior to Initiation of Site Activities for Submission of Application Form
Large Site*	> or = 200 m^3	-Environmental Report including: chemical testing, site history -Application	10 Days
Small Site*	< 200m^3	-Application	5 Days

***The classification of site size will be determined by the total volume of material to be excavated from a site and not the number of loads. The number of loads is to be used only as a guide.**

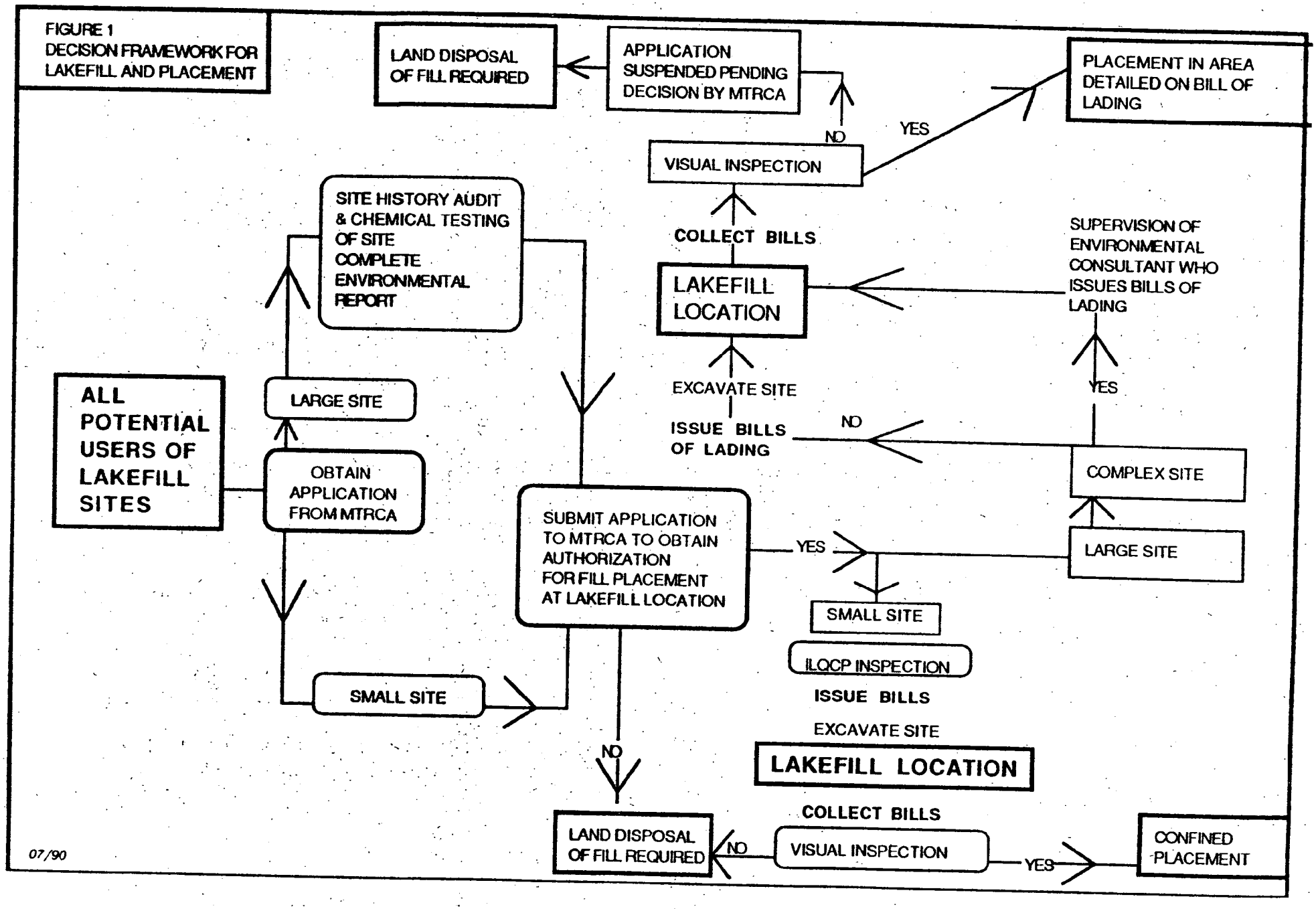
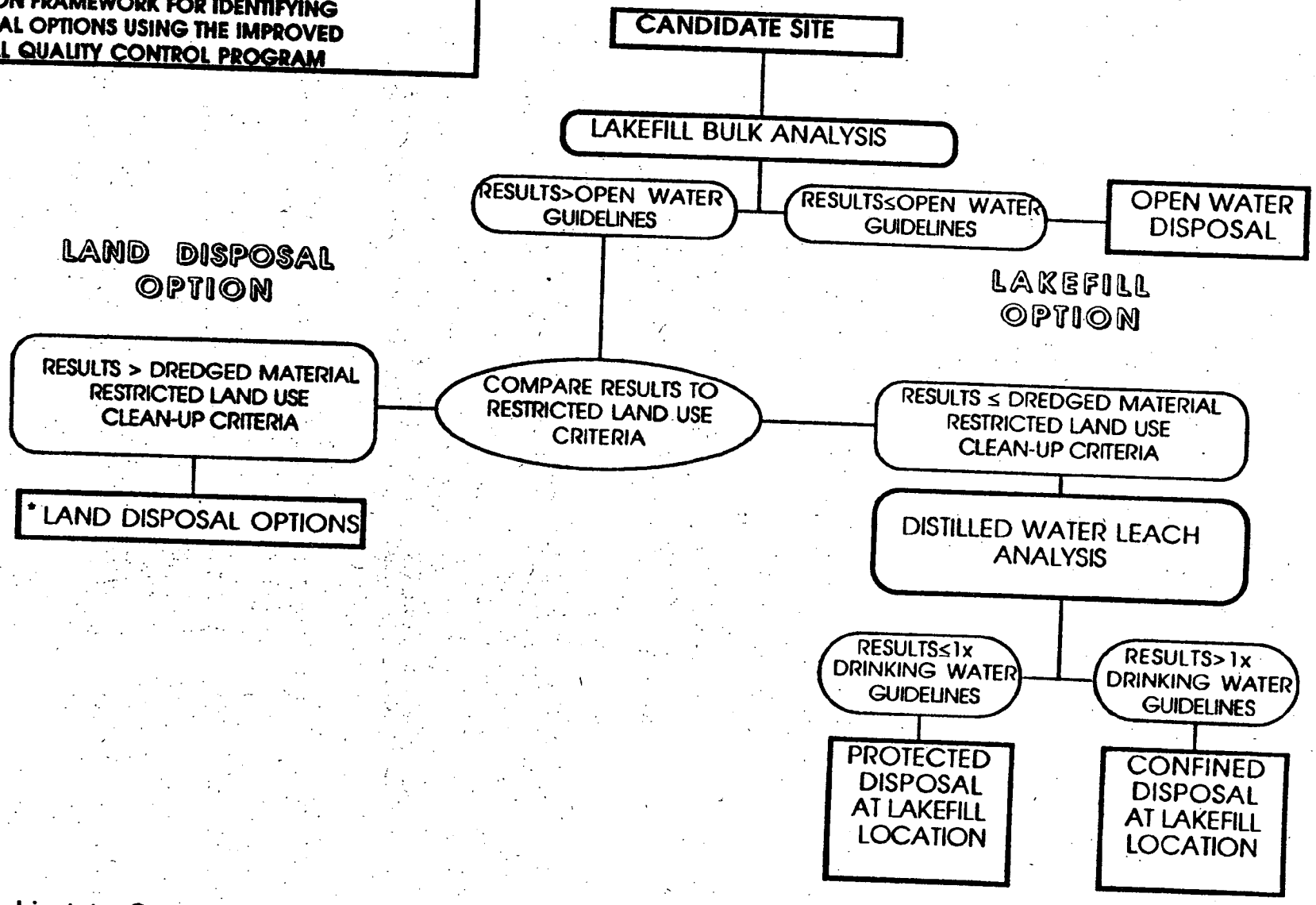

FIGURE 1
DECISION FRAMEWORK FOR LAKEFILL AND PLACEMENT
LAND DISPOSAL OF FILL REQUIRED
APPLICATION SUSPENDED PENDING DECISION BY MTRCA
PLACEMENT IN AREA DETAILED ON BILL OF LADING
NO
YES
VISUAL INSPECTION
SITE HISTORY AUDIT & CHEMICAL TESTING OF SITE COMPLETE ENVIRONMENTAL REPORT
COLLECT BILLS
LAKEFILL LOCATION
SUPERVISION OF ENVIRONMENTAL CONSULTANT WHO ISSUES BILLS OF LADING
ALL POTENTIAL USERS OF LAKEFILL SITES
LARGE SITE
EXCAVATE SITE
ISSUE BILLS OF LADING
NO
YES
COMPLEX SITE
OBTAIN APPLICATION FROM MTRCA
SUBMIT APPLICATION TO MTRCA TO OBTAIN AUTHORIZATION FOR FILL PLACEMENT AT LAKEFILL LOCATION
YES
LARGE SITE
SMALL SITE
ILQCP INSPECTION
ISSUE BILLS
EXCAVATE SITE
LAKEFILL LOCATION
SMALL SITE
NO
COLLECT BILLS
LAND DISPOSAL OF FILL REQUIRED
NO
VISUAL INSPECTION
YES
CONFINED PLACEMENT
07/90

FIGURE 2

DECISION FRAMEWORK FOR IDENTIFYING DISPOSAL OPTIONS USING THE IMPROVED LAKEFILL QUALITY CONTROL PROGRAM



* Subject to Ontario Regulation 309 and/or M.O.E. Decommissioning Guidelines

December, 1988

THE METROPOLITAN TORONTO AND REGION CONSERVATION AUTHORITY

IMPROVED LAKEFILL QUALITY CONTROL PROGRAM

APPLICATION FOR BILL OF LADING

(PLEASE PRINT)

SITE OWNERSHIP INFORMATION

PROPERTY OWNER'S NAME _____ PHONE NUMBER _____

PROPERTY OWNERS ADDRESS _____ CITY _____

PROVINCE _____ POSTAL CODE _____

DATE _____ COMPANY NAME _____ BUS. PHONE _____

SITE LOCATION INFORMATION

PROJECT ADDRESS _____ PROPOSED STARTING DATE _____

CITY _____ EXPECTED COMPLETION DATE _____

EXISTING LAND USE (PLEASE CHECK APPROPRIATE CATEGORY

- ☐ RESIDENTIAL
- ☐ INDUSTRIAL
- ☐ COMMERCIAL
- ☐ ENGINEERING CONSTRUCTION
- ☐ INSTITUTIONAL
- ☐ OTHER:

INDICATE ANY OTHER ENVIRONMENTAL CONCERNS

_____

_____

_____

_____

SITE ASSESSMENT INFORMATION

SITE ASSESSMENT BY _____

ANTICIPATED NUMBER OF TRUCK LOADS _____

ANTICIPATED VOLUME _____

VOLUME OF MATERIAL TO GO TO LANDFILL _____

PROPERTY OWNERS SIGNATURE _____

SITE APPROVED BY CONSULTANT FOR THE FOLLOWING DESTINATION AREAS (IN NUMBER OF TRUCK LOADS)

OPEN WATER _____

PROTECTED _____

CONFINED _____

OFFICE USE ONLY

TICKET NUMBERS _____

_____

_____

APPLICATION STATUS _____

JOB STATUS _____

GRID INDEX _____

PROJECT NUMBER _____

DATE ISSUED _____ APPROVED BY _____

07/90

FIGURE 3 APPLICATION FOR BILL OF LADING

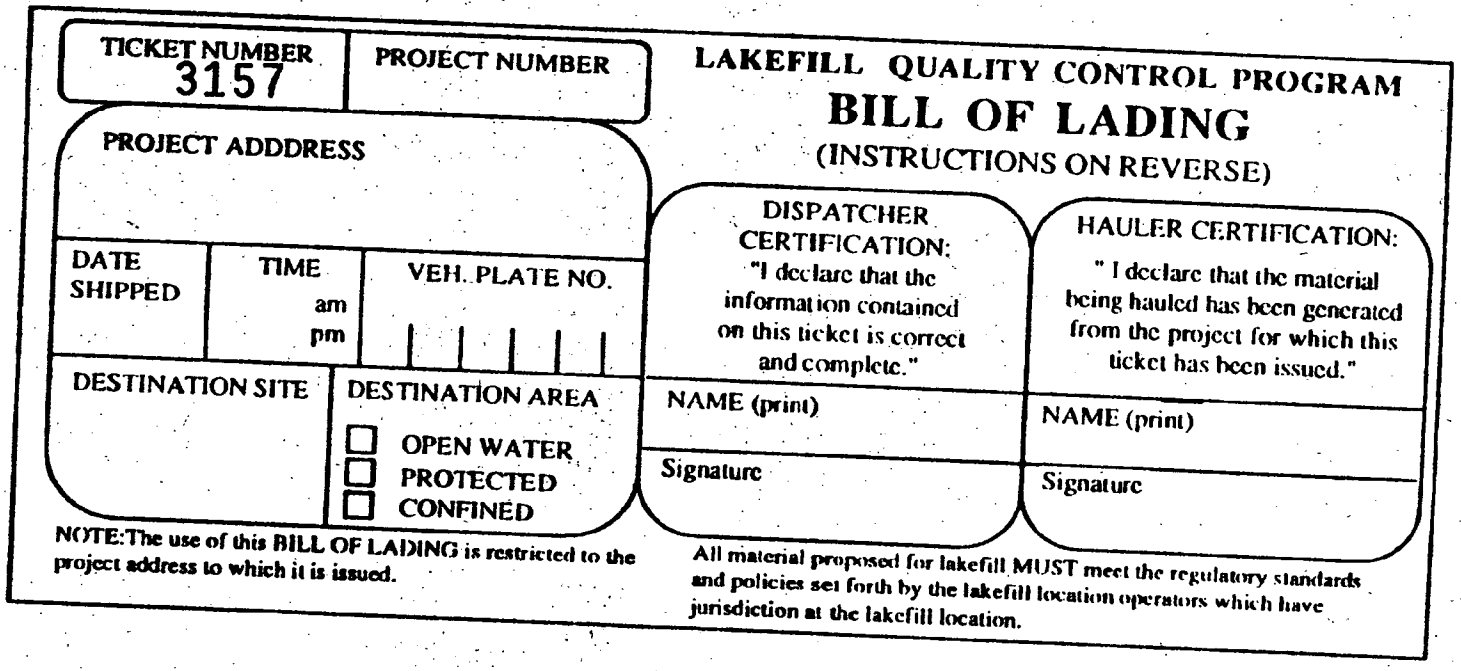


FIGURE 4 BILL OF LADING

The Metropolitan Toronto And Region Conservation Authority

LAKEFILL LOCATION SOIL ACCEPTABILITY CHECKLIST

LAKEFILL LOCATION	EXCAVATING COMPANY	TYPE OF TRUCK	LICENCE #
	OWNER/DEVELOPER		

JOB SITE LOCATION	SIZE OF JOB SITE	DATE	JOB #
	LARGE ☐ SMALL ☐		

WHY WAS THE TRUCK DENIED ACCESS TO THE LAKEFILL SITE ?

RECOMMENDED APPLICATION STATUS	AUDIT?	FILL AREA LOAD WAS APPROVED FOR
	YES ☐ NO ☐	

DETAILS ON ACTION TAKEN

INSPECTOR _____ SIGNATURE _____

FIGURE 5

LAKEFILL LOCATION SOIL ACCEPTABILITY CHECKLIST

APPENDIX A

OPEN WATER DISPOSAL GUIDELINES

(Source: Ministry of the Environment,1976

Materials to be used as fill at lakefill projects shall satisfy MOE's dredge spoils disposal guidelines for open-water disposal as outlined in MOE's Construction Handbook (1976).

The parameters to be analyzed for and the guideline for each are listed below:

Parameters Under Strict Control	Guideline ppm
1. Mercury	0.3
2. Polychlorinated Biphenyls (PCB's)	0.05
3. Lead	50.0
4. Cadmium	1.0
5. Oil and Grease	1500.0
6. Volatile Solids (loss on ignition at 600 degrees celsius)	60,000
7. Total Phosphorus	1,000
8. Arsenic	8.0
Parameters to be Assessed on a Case By Case Basis	
9. Copper	25.0
10. Zinc	100.0
11. Total Kjeldahl Nitrogen	2,000
12. Chromium	25
13. Iron	10,000
14. Nickel	25
15. Cobalt	50
16. Silver	0.5
17. Cyanide	0.1
18. Ammonia	100

DECEMBER, 1988

Deo whose guidelines

