BAKER LAKE, NT

SEWAGE & SOLID WASTE DISPOSAL

OPERATION & MAINTENANCE MANUAL

DILLON CONSULTING LIMITED
98-5538-01-01
May 1999

DILLON
CONSULTING

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1.0 INTRODUCTION

1.1 Purpose

This manual has been produced to assist Hamlet of Baker Lake personnel in the proper operation and maintenance of the Hamlet's waste disposal facilities. The manual has been developed according to the requirements of the Nunavut Water Board, and is based on the "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities", MACA, 1996.

1.2 Site Setting

The terrain around Baker Lake is comprised primarily of silty sand and silty clay deposits overlying boulder till, beach deposits and reworked till. From the shore of Baker Lake, the ground slopes upward toward rocky ridges about 1 km inland. The Hamlet is within the zone of continuous permafrost, with summer thawing producing a maximum active layer depth of approximately 1.5 m. Vegetation consists primarily of mosses, lichens and sedge grasses. The climate is characterized by cool summers with mean July highs of 16°C and lows of 6°C and cold winters with mean January highs of -29.5°C and lows of -36.4°C. The mean annual precipitation of 235 mm classifies the area as semi-desert. (www.infonorth.org)

The Hamlet of Baker Lake processes wastewater and sewage using a wetlands treatment system located approximately 1.2 km north of the town site. Trucks are used to haul sewage to the wetlands system. From the truck discharge point, the sewage travels through several overland flow areas separated by Lagoon, Finger and Airplane Lakes. From Airplane Lake the effluent discharges to Baker Lake. The total linear distance from the truck off loading point to Baker Lake is approximately 3.0 km.

The landfill servicing the Hamlet of Baker Lake is located approximately 1.2 km north of the Hamlet, immediately South of the sewage wetlands on the north wall of a gently sloping valley. Access to the site is via a 1.5 km all weather gravel road. The landfill site was expanded and modified in 1998 to extend the life of the facility and to improve compliance with GNWT guidelines for municipal waste disposal.

The location of the sewage and solid waste disposal facilities relative to the Hamlet are shown in **Figure 1**.

1.3 Population Projection

The population projection for the Hamlet to 2006 was obtained from the NWT Bureau of Statistics. **Table 1** displays the projection.

Table 1
Population Projection

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Population	1,440	1,469	1,502	1,529	1,557	1,590	1,619	1,648	1,678	1,704

1.4 Contact List

The individuals responsible for the operation of the sewage and solid waste facilities in Baker Lake are the following:

Joe Aupaluktuq	Hamlet Operations Manager	793-2785
Silas Kenalogak	Municipal Works Foreman	793-2881

2.0 BACKGROUND

2.1 General

The wetlands sewage treatment system was constructed in 1980. Sewage is collected from the community and transported to the treatment facility in trucks. The trucks discharge the wastewater to a small holding cell with a permeable berm. Effluent seeps through the berm and flows approximately 200 m downhill to Lagoon Lake. From there, the drainage flows through Finger Lake and Airplane Lake before entering Baker Lake. Treatment of the sewage occurs naturally as the effluent travels through the wetlands. **Figure 2** shows the layout of the sewage discharge area.

The Hamlet of Baker Lake currently obtains its drinking water from Baker Lake. A recirculating water main services the nurses residence, group home, hospice and the RCMP. Water trucks are used to distribute water to the remainder of the community. The inlet pipe is located approximately 200 m offshore, approximately 2 km West of the wetlands treatment discharge into Baker Lake. Raw water treatment consists of chlorination.

The solid waste disposal facility was constructed in 1991. Solid waste is collected on a scheduled daily basis from the community and transported to the landfill in a compactor truck. Separate disposal areas are provided for bulky and hazardous wastes and waste oil. The site was expanded and modified in 1998 to improve compliance with the "Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories, 1990". Runoff from the site enters the sewage treatment system at Finger Lake. **Figure 3** shows the layout of the solid waste facility.

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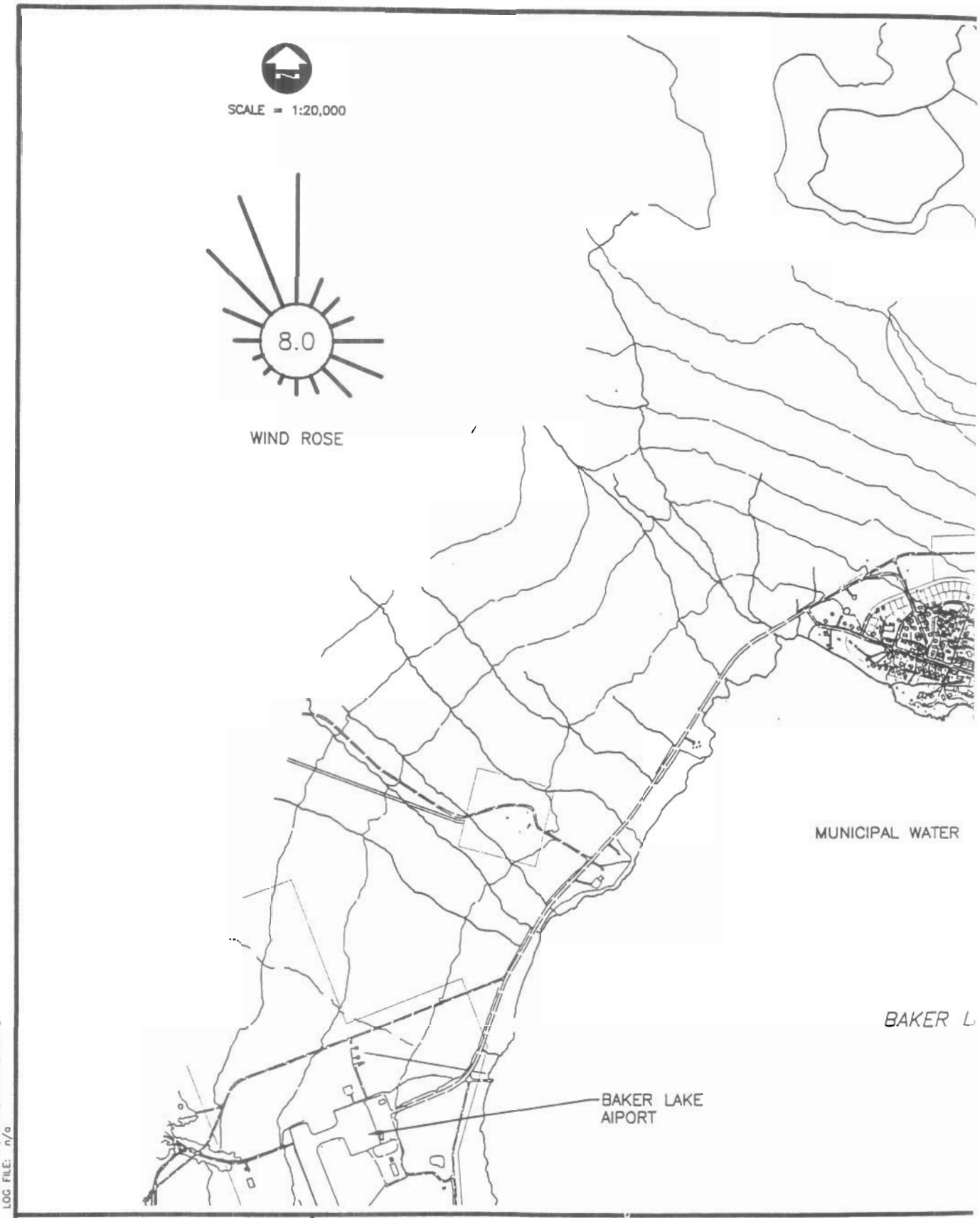

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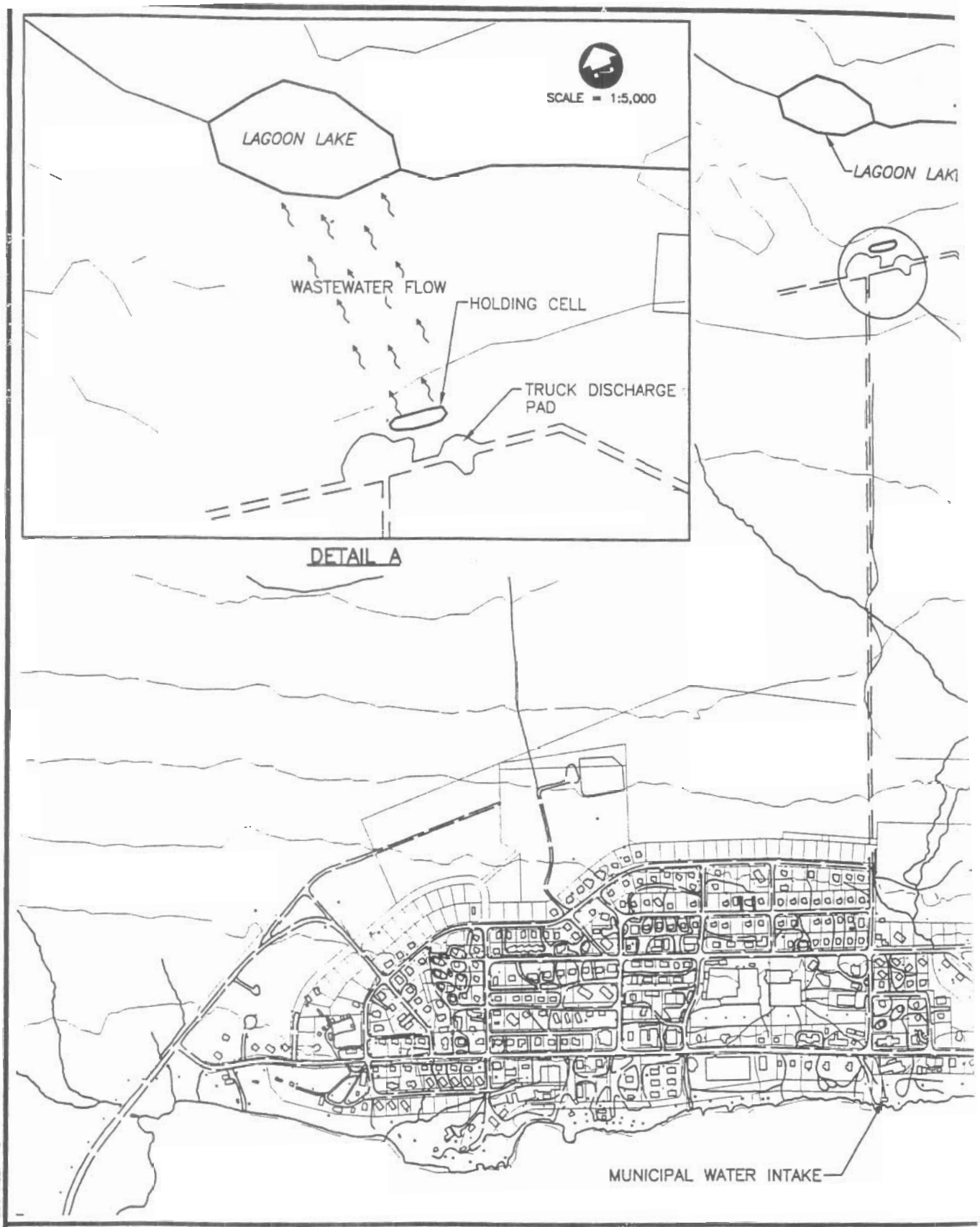

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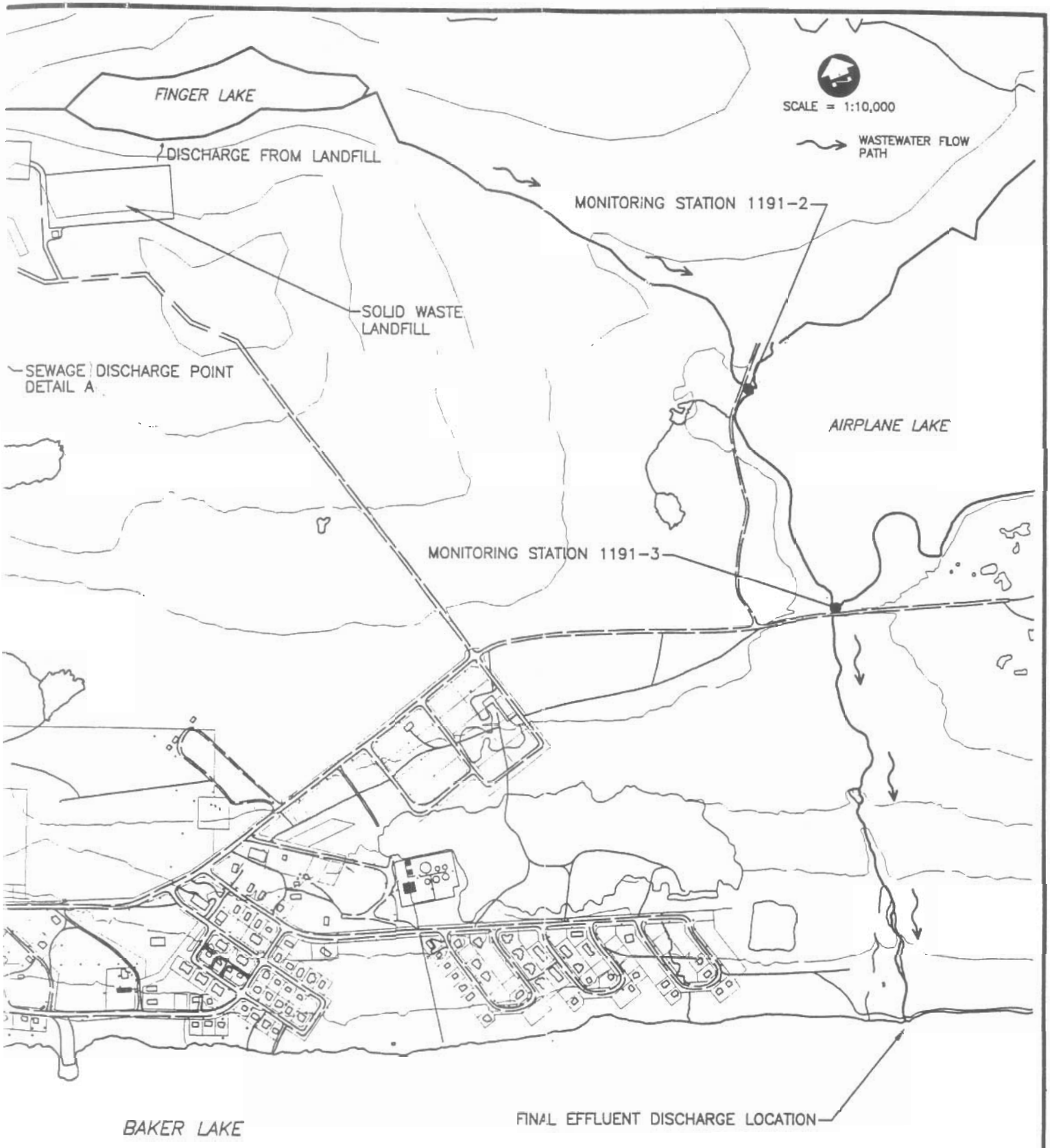

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ISPOSAL FACILITIES

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2.2 Sewage Production

Volume I of the Guidelines for the Planning, Design, Operation and Maintenance of Wastewater Lagoon Systems in the Northwest Territories, 1988, provides a relationship for estimating a community's wastewater production based on its population. For northern communities using trucked water delivery and sewage pumpout collection, the rate is estimated at 90 ℓ/c·d. The per capita wastewater production rate can be combined with the population projections to predict wastewater generation volumes in Baker Lake to the year 2006. **Table 2** displays the wastewater generation estimate for Baker Lake.

Table 2
Predicted Wastewater Generation

Year	Population	Wastewater Production Rate (ℓ/c·d)	Wastewater Volume (ℓ/d)
1998	1,469	90	132,210
1999	1,502	90	135,180
2000	1,529	90	137,610
2001	1,557	90	140,130
2002	1,590	90	143,100
2003	1,619	90	145,710
2004	1,648	90	148,320
2005	1,678	90	151,020
2006	1,704	90	153,360

The physical, chemical and biological characteristics of sewage are referred to as its composition. In communities where water delivery/sewage collection is by truck, the ratio of residential to commercial/industrial input is very high. Sewage composition is essentially "domestic" in nature. **Table 3** displays Baker Lake's average wastewater composition reported in Dillon's 1995 report "Sewage Treatment Using Tundra Wetlands".

Table 3
Wastewater Composition

Parameter	Concentration
Biological Oxygen Demand (BOD_5)	383 mg/ℓ
Total Suspended Solids (TSS)	365 mg/ℓ
Volatile Suspended Solids (VSS)	239 mg/ℓ
Ammonia (NH_3)	72 mg/ℓ
Total Phosphorous (TP)	17 mg/ℓ
Faecal Coliforms (FC)	1.5e08 CFU/ℓ

2.3 Solid Waste Production

Volume I of the "Guidelines for the Planning, Design, Operation & Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories" provides a relationship for estimating the volume of solid waste produced annually by a community based on population. **Table 4** displays the solid waste generation projection for the Hamlet of Baker Lake to 2006. The projection is for uncompacted waste only. The above mentioned guidelines suggest that by using compaction and burning, the volume may be reduced by 2/3 to 3/4.

Table 4
Garbage Production Projection*

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Volume	10,019	10,310	10,641	10,824	11,086	11,437	11,661	11,928	12,218	12,416

* Volumes are for uncompacted solid waste.

The relationship correlates well with actual uncompacted waste production volumes for 1996 and 1997 obtained from community records. Burning and compaction are conducted regularly at the Baker Lake facility.

3.0 SEWAGE SYSTEM

3.1 Manual Organization

This section of the manual was developed to present operational and maintenance procedures to designated operators of the wastewater treatment facility in Baker Lake. Each set of procedures is explained individually. The final section of the manual provides a summary of operational and maintenance procedures broken down into daily, weekly, monthly and annual tasks.

3.2 Equipment List

The equipment required to operate the Baker Lake sewage treatment system consists of the following:

- One Ford F800 9,000 litre capacity suction truck,
- One Ford F800 8,000 litre capacity suction truck,
- Two Ford F700 4,540 litre capacity suction trucks.

3.3 Site Personnel

The Hamlet Operations Manager is responsible for the overall operation of the sewage treatment facility. The general operation and maintenance of the facility is the responsibility of the Municipal Services Foreman. One person is employed by the Hamlet to operate each sewage truck.

3.4 Operational Procedures

These procedures must be carried out frequently to ensure the smooth operation of the treatment system.

The sampling location for the Baker Lake sewage treatment system is located at the inlet to Airplane Lake and has been designated Station Number 1191-2. Sampling and monitoring is to be conducted by collecting grab samples during periods of open water according to the following schedule:

Monthly

- Ammonia-Nitrogen,
- BOD_5,
- Faecal Coliform,
- pH,
- Suspended Solids,
- Total Phosphate.

Annually

- Calcium,
- Conductivity.
- Magnesium,
- Oil and Grease,
- Potassium,
- Sodium,
- Sulphate,
- Total Cadmium, Chromium, Copper, Iron, Lead, Mercury, Nickel and Zinc,
- Total Organic Carbon,
- Total Phenols.

3.4.3 Record Keeping

Records should be kept to assist in planning for yearly operations and to assist in the evaluation of the effectiveness of the sewage treatment facility. The records should be stored in the Hamlet Office and be maintained by the Operations Manager. As a minimum, the following information should be recorded:

- The number of trips the sewage truck makes to the site per day, the approximate

volume of sewage discharged to the system,

- The dates any monitoring is conducted,
- The results of the monitoring program,
- Any maintenance activities carried out on the facility.

3.4.4 Special Considerations

During the winter, the sewage freezes and forms an ice pack on the slope of the valley between the discharge point and Lagoon Lake. During this period there is effectively zero discharge into the wetlands system. In the spring, this 8 month accumulation melts and enters the system over a period of four weeks.

3.4.5 Safety

Due to the potential health hazards associated with sewage handling and treatment, the following safety precautions should be taken by sewage treatment personnel:

- Equipment is to be kept clean,
- Hands are to be washed frequently, as a minimum after work and before eating,
- Work clothes should not be worn home. Clothing should be changed at the public works yard building,
- Work gloves and boots should be worn at all times,
- Personnel should receive appropriate vaccinations and ensure they are kept up to date.

3.5 Maintenance Procedures

The following maintenance procedures should be carried out to ensure the wastewater treatment infrastructure operates efficiently.

3.5.1 Sewage Trucks and Holding Tanks

The transport of sewage to the treatment facility is critical to the whole process. As such, it is important that the sewage trucks be kept in good repair.

- Repairs to sewage trucks should be completed as a priority,
- Sewage trucks should not sit full for long periods in the winter,
- Holding tanks must be kept in good working order and prevented from freezing during the winter.

3.5.2 Access Road and Truck Pad

The access road is constructed of gravel and is approximately 1.5 km long. Basic road maintenance is to be conducted as follows:

- At least twice per year, the road and truck pad is to be graded to smooth and reshape the surface,
- As necessary during the winter, snow is to be removed to ensure unrestricted access to the sewage discharge point is maintained,
- During snow removal care is to be taken not to damage the rails demarcating the edge of the discharge point,
- Any spilled and frozen wastewater should be removed with the snow,

- The discharge point should be monitored for erosion problems,

- If required, rip rap or other protective material may be placed at the discharge location to reduce erosion.

3.5.3 Fence and Signs

Signs are to be posted at the discharge location informing the public of the presence of the sewage treatment area and warning of the potential health risks associated with it. A sign is also to be posted at monitoring station 1191-2 identifying it as a wastewater discharge monitoring station.

- On a monthly basis, the signs are to be checked to insure they are present, have not become obstructed and are readable.

3.5.4 Drainage

The truck pad at the sewage discharge point should be graded such that any wastewater spilled during the off loading procedure will flow into the sewage treatment system.

3.6 Operational and Maintenance Summary

Daily

- Collect waste water from the holding tanks and transport it to the sewage truck discharge point,
- Clean up any spills immediately,
- Clear snow from road and truck pads as required,
- Record O&M information.

Weekly

- Ensure significant erosion is not occurring at the discharge location,
- Record O&M information.

Monthly

- Grade and maintain the access road and truck pads if required,
- Check signs to ensure they are present and in readable condition,
- Conduct the monthly monitoring program,
- Record O&M information.

Yearly

- Conduct the annual monitoring program,
- Review the O&M records to evaluate the effectiveness of the sewage treatment system and plan for the upcoming year.

4.0 SOLID WASTE FACILITY

4.1 Manual Organization

This section of the manual was developed to present operational and maintenance procedures to designated operators of the landfill facility in Baker Lake. Each set of procedures is explained individually. The final section of the manual provides a summary of operational and maintenance procedures broken down into daily, weekly, monthly and annual tasks.

4.2 Acceptable Waste

The disposal site is organized into four separate disposal areas:

Refuse disposal area:

This is the largest disposal area at the landfill. General household, restaurant, institution, store and construction wastes are placed here. The disposal area extends approximately 240 m north of the access road and is approximately 100 m wide. An earthen berm topped with a 2.4 m high fence surrounds the site to help control drainage, restrict access during off hours and prevent the off site migration of wind blown debris. The fence is 4" wire mesh on the south berm wall and chain link along the remaining walls. Drainage into the sewage wetlands is provided via a culvert located on the north berm wall.

Bulky waste area:

Large non-combustible items such as automobiles, snowmobiles, old furnaces and holding tanks are placed in the bulky waste disposal area. It consists of a gravel pad approximately 80 m long x 70 m wide located northwest of the refuse disposal area. Three 20 m x 40 m sections have been fenced off and are used for storing tires, appliances and hazardous materials.

Waste oil area:

The waste oil cell consists of an unlined pit 12 m x 12 m x 2 m deep, located immediately south of the main refuse disposal area. The pit is located outside the fence line. Baker Lake Contracting operates a used oil furnace in the community, and the Hamlet is encouraging all parties to dispose of their used oil with the contractor. The Hamlet is planning to decommission the waste oil area at the landfill.

Hazardous materials area:

A fenced 20 m x 40 m portion of the bulky waste area has been designated for storing hazardous materials. A container has been provided for the disposal of materials such as paints, household hazardous wastes and aerosol containers. Pallets are in place for the storage of used batteries.

4.3 Equipment List

The following equipment is available as required to perform maintenance activities at the site:

- 1 Cat 936 Loader
- 1 Cat D6 Bulldozer
- 1 Tandem Axle Dump Truck

Additionally, the following equipment is dedicated to the landfill full time:

- 1 Drum Crusher (on site)
- 1 Ford F800 18 cubic yard Heil Compactor Garbage Collection Vehicle
- 1 Ford F350 12 Haul All Compactor (Standby)

4.5.2 Cover Operations

A minimum of twice per year, a compaction and cover cycle is to be conducted at the landfill. Using the Cat D6:

- The accumulated waste is spread with the Cat and compacted by driving over it several times with the Cat,
- The compacted material is worked back up slope a bit at a time to form compacted layers of waste, not more that 2.5 m thick,
- Each 2.5 m layer is covered with material obtained from the borrow pit immediately south of the landfill,
- Cover material should form a layer 0.15 m to 0.20 m thick between compacted layers and a layer 0.5 m thick on top of the compacted layers,
- Compact the cover material,
- Slope the compacted cover and waste to allow drainage. See **Appendix A**.

4.5.3 Honey Bag Disposal

Honey bags are no longer widely used in Baker Lake. Any that do require disposal are to be placed in the waste oil pit.

4.5.4 Waste Oil Disposal Area Operation

The waste oil disposal area is an unlined 12 m x 12 m pit approximately 2 m deep, located immediately south of the general disposal area. The preferred method for disposing of waste oil is to give it to Baker Lake Contracting to burn in their waste oil furnace. If the contractor cannot accept the waste oil, the area is to be operated as follows:

- Place waste oil products into 205 l drums within the pit,
- When the pit is full, cover with a minimum of 0.5 m of material.

4.5.5 Hazardous Waste Area Operation

The hazardous materials storage area is a 20 m x 40 m fenced area within the bulky waste disposal area. A water tank has been cut in half and placed here for the disposal of paints, household hazardous wastes, aerosol containers, etc. Used batteries are to be placed on pallets in this area. Specific information on handling hazardous waste materials can be found in the following GNWT Dept. of Resources, Wildlife and Economic Development Guidelines:

- Environmental Guideline for Industrial Waste Discharges,
- Environmental Guideline for the General Management of Hazardous Waste,
- Environmental Guideline for Waste Asbestos,
- Environmental Guideline for Waste Paint,
- Environmental Guideline for Waste Solvents,
- Environmental Guideline for Ozone Depleting Substances,
- Environmental Guideline for Waste Batteries,
- Environmental Guideline for Waste Antifreeze.

4.5.6 Bulky Waste Area Operation

The bulky waste disposal area is a levelled pad 80 m x 70 m located west of the general disposal area. Three 20 m by 40 m sections have been fenced off and are used for storage of tires, appliances and hazardous materials. To ensure effective operation:

- Place bulky wastes in an organized manner, starting from the back and working towards the front,
- Stack bulky wastes whenever possible to conserve space,
- Ensure that wastes are stacked in such a way that it is safe to walk through the site.

4.5.7 Special Considerations

Winter Operation A compaction and covering cycle is completed in the fall to prepare for the onset of winter.

Wind A chain link and wire mesh fence has been constructed around the perimeter of the landfill to help control the movement of wind driven material off the landfill site.

Scavenging Public access is permitted during working hours but several steps are being taken to reduce the occurrence of scavenging. Regular burning is conducted to reduce the volume of scavengeable waste present on the site. Perimeter fencing with a gate across the access road has been constructed to restrict access to the facility during off hours. A dumping plan has been posted at the landfill entrance to direct private disposal.

Spring clean-up A spring clean-up is conducted after the snow has melted to collect waste that has accumulated around the Hamlet over the winter.

Safety Due to the nature of the facility, safety precautions should be taken by those personnel involved in the operation and maintenance of the

landfill.

- Water and puncture proof gloves and safety boots are to be worn at all times,
- Work clothes should not be worn home. Change at the public works yard building,
- Hands are to be washed frequently, as a minimum after work and before eating,
- During waste burning, personnel should stand clear to reduce exposure to toxic fumes and smoke,
- Burning wastes should not be left unsupervised,
- Personnel should receive appropriate vaccinations and ensure they are kept up to date,
- Proper lifting technique should be exercised, lift with your legs and not your back,
- Only personnel trained to handle hazardous materials should do so.

4.5.8 Site Records

Records should be kept to assist in planning for yearly operations and future expansion. The information should be reviewed yearly to evaluate the effectiveness of the operation and to forecast future operational requirements. The records should be kept in the Hamlet Office and maintained by the Operations Manager. As a minimum, the following information should be recorded:

Refuse

- The number of trips and loads per day,
- The dates of burning,
- The dates of compaction and cover.

Bulky Wastes

- Itemize the site contents,
- The number of trips to the site and the dates,
- The date when the site is full.

Waste Oils

- The dates when drums are filled,
- The number of full drums present at the end of the season,
- Users of the site, and the dates of use.

Hazardous Materials

- The number of trips to the site and the dates,
- The type of material placed there,
- The party using the site,
- The date when the site is full.

4.6 Maintenance Procedures

Proper maintenance of a landfill facility is crucial to ensuring the efficient operation of all the components. Activities can be divided into two categories: storage/collection maintenance and site maintenance.

4.6.1 Storage and Collection Maintenance

Garbage collection is conducted from Monday to Friday. Residential collection is twice per week, commercial and institutional collection is also twice per week but may be increased to daily for an extra fee. A monthly tipping fee is collected from those parties not receiving regular collection.

4.6.1.1 Storage Maintenance

As the first step in the waste collection process, residential and commercial storage containers should be adequately maintained. The following points should be considered:

- Private burning of wastes within the Hamlet boundaries should be discouraged as the smoke and fire hazards generally outweigh any benefit from reducing the volume of waste,
- Garbage containers should be covered to prevent wind blown debris from littering the community and to prevent animals from getting into the garbage,
- Bulky wastes should not be left in residential areas for long periods due to aesthetic and safety concerns.

4.6.1.2 Collection Maintenance

The waste collection vehicle should be maintained in good operating condition to ensure the collection service is not interrupted for extended periods. Other maintenance considerations include the following:

- The collection vehicle should be equipped with a shovel to clean up accidental spills during collection,
- The collection vehicle should be cleaned periodically,
- The standby F350 Haul-All compactor is to be used when the primary F800 Heil compactor is down for maintenance or repair.

4.6.1.3 Access Road Maintenance

The access road is gravel and approximately 1.5 km long. Basic road maintenance is to be conducted as follows:

- At least twice per year, the road is to be graded to smooth and reshape the surface,
- As necessary during the winter, snow is to be removed to ensure unrestricted access to the site for the garbage collection vehicles.

4.6.1.4 Fence Maintenance

A 2.4 m high fence is in place around the perimeter of the landfill. The fence serves the dual purpose of restricting public access to the site and reducing the migration of windblown debris out of the landfill area. On a weekly basis, the following maintenance procedures should be carried out on the fence:

- Wind blown material should be removed from the fence to reduce lateral loading and to improve the aesthetics of the site.

On a monthly basis, the following maintenance procedures should be carried out on the fence:

- The fence should be examined for holes in the mesh,
- The fence posts should be inspected for frost heave,

4.6.1.5 Sign Maintenance

A sign posted at the entrance to the site identifies the different disposal areas at the facility and outlines permissible dumping practices for each. The separate disposal areas are identified with their own signs. A warning sign indicating the potential hazards associated with the site is also located at the entrance.

- On a monthly basis, check to insure the signs are present, have not become obstructed and are readable.

4.6.1.6 Drainage Maintenance

Culverts have been installed along the north berm surrounding the general disposal area to provide drainage. The landfill drains into the sewage wetlands system. Maintenance should be conducted on the culverts to ensure the site drains as intended and to prevent unwanted pooling of water:

- Weekly, the culverts should be inspected to ensure they have not become blocked,
- Obstructions should be removed to ensure drainage is unrestricted.

4.6.1.7 Fire Maintenance

Fires are set at the landfill to reduce the overall waste volume and to discourage scavenging. Controlled burns occur two to three times per week as required. The following practices should be adhered to when burning waste:

- Only burn when conditions permit and keep the fire under control at all times,
- Measures should be taken to ensure the fires do not become deeply seated, making extinguishment difficult,
- Open and deep seated fires may be extinguished by smothering with cover material,
- Open fires should not be left unattended.

4.7 Operational and Maintenance Summary

Daily

- Collect waste from the Hamlet and transport it to the landfill,
- Keep the entrance gate locked after hours of operation,
- Ensure all wastes stay in designated areas,
- Clean up any spills immediately,
- Clear snow from roads and disposal areas as required,
- Record O&M information.

Weekly

- Burn waste material as required,
- Check to ensure the culverts have not become obstructed,
- Pick up windblown materials which have migrated past the debris fences,
- Remove wind blown debris off fence,
- Record O&M information.

Monthly

- Grade and maintain access roads if required,
- Check and fix fences if required,
- Check signs to ensure they are in readable condition,
- Record O&M information.

Yearly

- Compact and cover refuse in the spring and fall,
- Review O&M records to assist in planning for the upcoming year.

REFERENCES AND RELATED STUDIES

DIAND, "Baker Lake Water Quality Study", December 1995.

Dillon Consulting Limited, "Sewage Treatment Using Tundra Wetlands", Produced for the Nunavut Water Board, MACA, DIAND, Environment Canada and the NWT Dept. Of Health, 1997.

Duong, D. and Kent, R., "Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories", Produced for MACA, October, 1996.

Heinke, G.W. and Smith, D.W., "Guidelines for the Planning, Design, Operation and Maintenance of Wastewater Lagoon Systems in the Northwest Territories, Volume II - Operations and Maintenance", Produced for MACA, November, 1988.

Heinke, G.W. and Wong, J., "Guidelines for the Planning, Design, Operation and Maintenance of Solid Waste Modified Landfill Sites in the Northwest Territories, Volume I - Planning and Design, Volume II - Operation and Maintenance", Produced for MACA, March, 1990.

www.infonorth.org Web Site.

5.0 EMERGENCY RESPONSE

Due to the nature of the facilities, uncontrolled fires and spills of unknown or hazardous materials should be treated with extreme caution. Hamlet personnel responsible for the solid waste and sewage disposal facilities should be trained in WHMIS, TDG and First Aid, and should ensure that appropriate vaccinations are kept current.

5.1 Fire

A contingency plan should be developed by the Hamlet Fire Department for responding to a fire at the solid waste disposal site. Special precautions should be implemented as burning refuse can produce poisonous vapours. The following procedures should be used in case of an uncontrolled fire:

- Evacuate area around landfill immediately,
- Keep all personnel up-wind of the site,
- Notify the Hamlet Fire Department at 793-2900.

5.2 Spills

Spills of unknown substances or hazardous substances at the landfill should be treated with extreme caution. Spilled materials should only be handled by properly trained and equipped personnel. The following actions should be undertaken by personnel in the event of a hazardous materials spill at the landfill:

- **Be alert and consider your personal safety first,**
- Assess the hazard to persons in the vicinity of the spill and where possible take action to control danger to human life. If possible, identify the material or products spilled,

- If the spill creates a fire, explosion or other hazard to human life, remove all potential ignition sources, if possible evacuate the area and contact the RCMP, 793-2922 and the Fire Department, 793-2900,

- If safe and practical, try to take appropriate action to stop the release of material,

- Contact the Municipal Services Foreman and report the spill,

- Mark the spill scene to warn the public and prevent access.

Once contacted, the Municipal Services Foreman shall:

- Proceed to the spill location,

- Make the necessary arrangements for first aid and removal of injured personnel. Take the necessary action, where possible, to secure the site to protect human safety,

- If not already done and if it is safe to do so, take the appropriate action to stop the flow or release of material. If at all possible take the necessary action to contain or prevent the spread of the spilled material,

- Contact the 24 Hour Spill Line at (867) 920-8130,

- Contact the Hamlet Operations Manager,

- Contact the Fire Department if required, 793-2900.

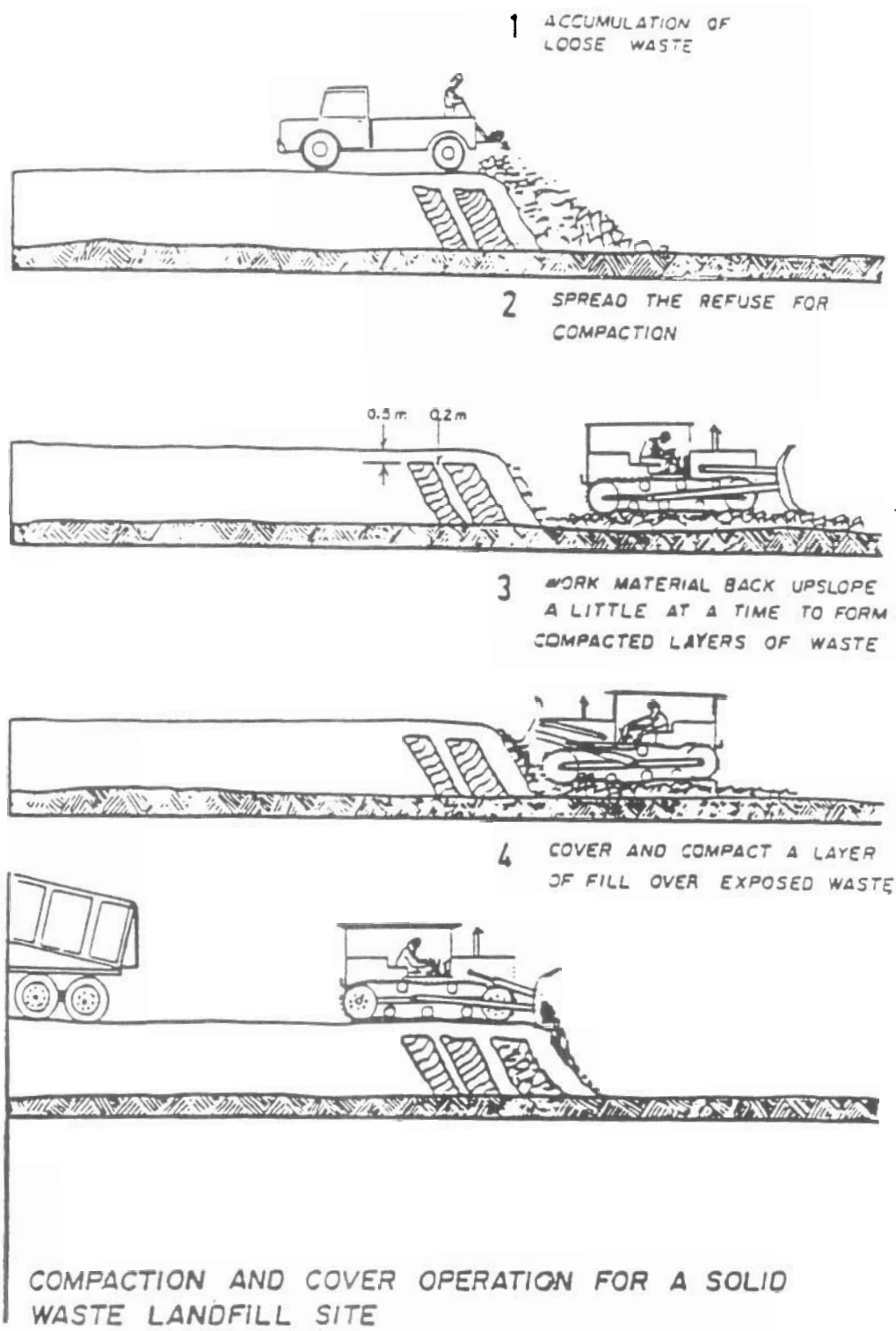
Throughout the spill response, personnel should place their personal safety as the highest priority.

APPENDIX A

Cover Operations

MODIFIED LANDFILL METHODS OF OPERATION

AREA METHOD - FLAT GROUND



COMPACTION AND COVER OPERATION FOR A SOLID WASTE LANDFILL SITE

AREA METHOD ON FLAT GROUND

Source: General Terms of Reference for a Community Solid Waste Management Study, Government of the Northwest Territories.

APPENDIX B

Hamlet of Baker Lake
Garbage Rate Bylaw

Telephone 819 - 793-2874
Fax 819 - 793-2509

BAKER LAKE, N.W.T.
X0C 0A0

BY-LAW NO. 103

****

A by-law of the Hamlet of Baker Lake in the Northwest Territories for the levying and collection of charges for garbage collection, pursuant to the provisions of the Hamlets Act, R.S.N.W.T., 1988, c-H-1, s.169(c).

****

WHEREAS, the Hamlets Act grants the Hamlet of Baker Lake to regulate, establish and operate garbage facilities and provide for the collection, removal and disposal of garbage and the collection of fees.

NOW THEREFORE, THE HAMLET COUNCIL OF BAKER LAKE, in duly assembled meeting, enacts as follows:

SHORT TITLE

1. This by-law may be cited as the "Garbage Rate By-law"

INTERPRETATION

2. In this by-law:

"commercial private/public user" means a commercial or industrial firm, organization, company, partnership, sole proprietorship, or government office, whether incorporated or unincorporated, which garbage service is provided;

"commercial public housing user" means a society, an association or a non- profit organization housing unit which garbage service is provided;

"garbage" means the same as "solid waste";

"garbage service" means the service provided by the Hamlet in accordance to their "Standards for Garbage Service"

"premises" means any building, facility or property at or for which garbage service may be provided;

5. (a) In default of payment of charges for garbage pick-up, the Hamlet may after ninety days from the date of invoice, in respect to which payment is in default, discontinue garbage pick-up to a premise. Where garbage pick-up has been discontinued a Reinstatement Fee shall be applied as per Schedule "A".

REPEAL

6. By-law Number 78 is hereby repealed.

EFFECTIVE DATE

7. This by-law shall come into effect upon third reading of this by-law.

READ a first time this 7TH day of NOVEMBER, 1996 A.D.

READ a second time this 7TH day of NOVEMBER, 1996 A.D.

William Noah
MAYOR WILLIAM NOAH

D. Zettler
SAO DENNIS ZETTLER

READ a third time and finally passed this 6TH day of MARCH 1997 A.D.

William Noah
MAYOR WILLIAM NOAH

D. Zettler
SAO DENNIS ZETTLER

HAMLET OF BAKER LAKE
BY-LAW #103
Schedule "A"
Garbage Service Rate

GARBAGE PICK-UP RATE

1) The following rate for garbage pick-up shall be applied:

(a) COMMERCIAL PRIVATE/PUBLIC USER shall be $1,200.00/annum/unit for two scheduled pick-up per week. An additional charge of $12.50/day shall be levied for additional garbage pick-up to a maximum of $3,000.00/annum/unit.

(b) COMMERCIAL PUBLIC USER shall be $600.00/annum/unit.

(c) PRIVATE USER shall be allowed a 52% rebate and shall be charged $288.00/annum/unit.

TIPPING RATE

2) The following tipping rates shall be applied:

(a) COMMERCIAL PRIVATE/PUBLIC USER shall be $1,080.00/annum/unit.

(b) COMMERCIAL PUBLIC USER shall be $480.00/annum/unit.

(c) PRIVATE USER shall pay $240.00/annum/unit.

BILLING CYCLE

3) Invoices shall be generated at the end of each month, in twelve equal payments. A user may pay yearly upon requested to the Hamlet.

APPLICATION FEE

4) The Application Fee as per Schedule "B" shall be $15.00.

REINSTATEMENT FEE

5) Reinstatement of service fee shall be $50.00.

OTHER CHARGES

6) Unscheduled garbage collection fee shall be $125.00/pick-up.

HAMLET OF BAKER LAKE
BY-LAW NO. 103
SCHEDULE "B"
APPLICATION FOR SOLID WASTE DISPOSAL SERVICE

Date: _____ Application Fee: $15.00

Last Name: _____ First Name: _____

Mailing Address: _____

Unit Number: _____ Lot Number: _____

Phone Number(s): _____

Commercial Private ___ Commercial Public ___
Commercial Residential ___ Private ___
Tipping ___

Service Requested: Mon.___ Tues.___ Wed.___ Thurs.___ Fri.___

Minimum Service: Twice a week. All garage pick-up to be provided by schedule system during normal working hours.

Service may be discontinues if account becomes overdue.

Every residential, commercial or institutional waste generator shall:

a) maintain in good condition, sufficient covered or enclosed waste container. A 45 gallon drum is adequate.
b) maintain, at his own expense, unimpeded access to their waste container(s), including the removal of ice, snow, mud, vehicles, pets and yard materials.
c) Any person having garbage upon their premise or land shall dispose of it in the described manner.
d) No person shall dispose of any explosive, inflammable, dangerous or hazardous waste in any waste container or any place without the express authority of the Hamlet.
e) Conditions of the operation and maintenance of the Hamlet landfill site and directions of the waste facility operator are to be strictly observed by all.

I understand that if the above conditions are not met, I will not be provided service. I agree that any damages relating to the provision of this service shall be at my own expense.

Applicant Signature: _____ Date: _____

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Hamlet Use Only

Approved ___ Not Approved ___ Comments _____
Account Number: _____ Group Number: _____
Billing Type: _____
Municipal Works (signature): _____ Date: _____