



Indian and Northern
Affairs Canada

Affaires indiennes
et du Nord Canada

KNIGHT

REPORT

FORECAST FOR O&M
GROSS FUNDING
REQUIREMENTS

1986/87

August 1986

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Technical Services
and Contracts

Services techniques
et marchés

REPORT RAPPORT

FORECAST FOR O&M
GROSS FUNDING
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1986/87

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Professional Services
Directorate

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Executive Summary

Technical Services and Contracts Branch has over the past several years, been using the Capital Asset Inventory System (CAIS) and operation and maintenance (O&M) unit cost calculations in the preparation of the Departmental O&M Gross Funding Requirement (GFR)* forecasts. Coincidental with this ongoing activity adjustments have been made this year to the City Center Indices (multipliers which adjust the base unit cost information) to more accurately reflect actual relationships in the field, as well as changes to the O&M unit costs caused by inflation and other economic factors.

Major changes have been incorporated in CAIS computerized operations to enhance its usefulness as a tool in determining GFR. In the past CAIS was used as a data base that only stored asset information. Manipulation of that asset information was done externally to CAIS to calculate the GFR. This year all calculations were done internal to CAIS and the results are based on the actual asset information recorded in CAIS.

Based on those calculations, the forecast of departmental gross funding requirements to operate and maintain facilities for the 1987/88 fiscal year in 1986/87 dollars is approximately \$125 million.

The 1986 GFR represents a 6.6% increase over the 1985 figure of \$117 million. On a region by region basis, all but Alberta and Yukon registered increased GFR. Alberta had a decrease of \$778,000 and the Yukon \$475,400. The Alberta decrease is due to a decrease in inventory and a decline in their City Center Indices. The Yukon decrease is essentially due to inventory decreases. All other regions had GFR increases of between \$1.2 million (Atlantic) and \$1.8 million (Ontario).

One of the major factors contributing to GFR increases was the significant increase in the number of Municipal Agreements. Prior to 1985 municipal type agreements were not included in the GFR. Last year only agreements relating to the provision of water and sewer services were included. This year it was also decided to include agreements where services for road maintenance, street lighting and fire protection were purchased. Overall the GFR in this area increased by \$4 million or over half of the \$7.7 million total GFR increase.

* Note: GFR is the total funds required to operate and maintain all inventoried assets. The funding sources that contribute to meet the GFR are not identified, but from the Department's point of view the Net Funding Requirement (NFR), that is the funding actually supplied to the regions, is the GFR less funds supplied through other funding contributions.

The asset inventory has also exhibited changes this year. What has had a great impact on the inventory has been the refinement and clarification of asset definitions. For example, where water supply mains were listed as mains last year, this year they are subdivided into heated and unheated mains. This type of detail makes for a more precise determination of GFR.

This report summarizes the data on which the GFR figure is based. The GFR inventory and O&M unit costs are displayed in several different formats in order to provide departmental officers with a definitive and common source of information to help manage departmental resources.

1.0 Introduction

For the past several years, Engineering and Architecture units in the regions and Technical Services and Contracts Branch (TS&C) at Headquarters have identified, categorized and recorded all real capital assets located on reserves across Canada which are funded, either fully or partially, by the department. Using the asset data obtained in conjunction with comprehensive, representative, Operation and Maintenance (O&M) costs, TS&C has been able to develop a Gross Funding Requirement (GFR) for the operation and maintenance of departmentally funded assets. That GFR calculation is used in addition to other uses, to provide support for Treasury Board funding submissions and to assist in establishing internal funding allocations.

Each year technical organizations in the regions provide TS&C with a new updated inventory. Concurrently, TS&C Branch specialists update O&M cost information using available departmental information and data obtained from third parties.

2.0 GFR Calculations

2.1 General

The Gross Funding Requirement is calculated from two separate but closely related information bases: inventory information and cost information. Changes in either base or more particularly in both bases can significantly affect the GFR for a particular facility type or region.

The GFR calculation process takes the inventory information for a particular asset and multiplies it by the appropriate cost information to produce a GFR. That individual GFR information is totaled to provide regional totals and totals by facility.

2.2 Inventory Information

The Department has an asset inventory system that contains a listing of real property on reserve in the Indian Program. This inventory system, the Capital Asset Inventory System (CAIS), is maintained by regional Engineering offices. The regions provide Headquarters with an updated inventory on an annual basis. All the regional information is rolled up at Headquarters to produce the national inventory.

CAIS was improved during the past year by the development of a user friendly input module and supporting documentation. This development allowed regions to more easily enter asset information and verify their input from last year. This is evidenced in the increase in asset information contained in CAIS.

The 1985/86 CAIS data base contained approximately 4000 records (a record being the information on one particular asset). The 1986/87 CAIS data base has over 16,000 records. The increase is representative of the modifications to CAIS and the improved input module that was developed.

With detailed asset information in CAIS, information is available to determine a GFR based on individual asset records. In previous years the information was obtained in summary format and then manipulated. Working on an item by item basis provides even better precision with respect to the GFR calculations. In calculating any unknown that has a large number of variables, the larger the sample size used, the more accurate the final estimate will be.

As was the case in 1985/86, Branch Specialists were provided with summary sheets listing the previous and current years asset information. In most instances there were few questions concerning any variances noted or the differences could be explained easily. Where no obvious answer existed specialists at HQ and the region in question had to review the information on a record by record basis. In each instance they arrived at a reasonable conclusion.

2.3 Cost Information

2.3.1 O&M Unit Costs

Standard O&M definitions have been developed for each of the different types of assets. Based on those definitions the department has developed basic costs for the operation and maintenance of buildings, water distribution systems and the other types of assets funded by the department. A "Base O&M Unit Cost" is defined as the price to maintain a given unit of a particular asset in Toronto. For example, the base unit cost to maintain a square meter of school in Toronto has been determined to be \$38.28.

Through the use of consultants, third party information contacts in other government departments and other methods, the base O&M costs are under constant revision and updating by Branch specialists.

The final results of the specialists efforts are shown in Table 2 which summarizes the O&M unit costs and compares them with the costs in the previous year. The following 5 reports provide a detailed description of the procedures and methodology used to develop the 1986/87 O&M Base Unit Costs.

The reports are listed below and are available on request.

EA-HQ-86-24 Operation and Maintenance Costs for Buildings
EA-HQ-86-38 Operation and Maintenance Costs for Municipal
Systems
EA-HQ-86-42 Operation and Maintenance Costs for Electrical
Facilities
EA-HQ-86-47 1985 O&M Unit Costs for Vehicles
EA-HQ-86-48 1985 O&M Unit Costs for Roads and Bridges

There are two multipliers which must be factored into the GFR calculations to translate the base Toronto unit cost information to an actual site unit cost. The two factors are the City Center Index (CCI) and the Zone or Remoteness Index (RI). Based on a review of both the City Center and Remoteness indices, it was felt that only a review and revision of the CCI's would be warranted for 1986/87.

The CCI translates the Toronto Base Cost to the cost at various centers located across the country. As most reserves are located in rural or remote settings another modifier had to be developed to further translate the city center modified cost to a cost appropriate to a given locale. The Remoteness Indices allow costs to be developed for reserves that are in urban, rural, remote or special access (i.e. no year-round road access) locations.

The department retained the firm of Both, Belle, Robb Limited early in 1986 to update the CCI, for over 80 different categories or activities for 33 cities. Prior to letting the contract the city centers used in 1985/86 were reviewed in detail. It was determined that improvements were required over the 1985/86 centers used. The following changes were agreed to:

1. The number of city centers would be increased from 32 to 33.
2. Timmins and St. Johns were added to the list.
3. Yellowknife was dropped from the list.

The changes were made to allow the GFR calculation to better reflect differences in costs between regions and to fill in gaps in the costing process.

The City Center Indices are calculated on a basket of goods approach that includes factors for labour, equipment and parts, energy and climate. Due to the complex interrelationships and the formulas used to calculate the individual indices some interesting results may be produced. For example, primarily due to changes in the price of energy, there are decreases in the western City Center Indices of up to 21% from last years indices. In other cases, where the cost of living (i.e. lower wages, energy prices and so on) is lower than Toronto, the index for that city center may be less than 1.00.

Appendix "B" outlines the definitions used to determine a remoteness classification for the purpose of O&M funding. These definitions are the same as those used in the publication "Classification of Indian Bands by Geographic Zone" produced by the Housing and Band Support Branch, Indian and Inuit Affairs, Indian and Inuit Affairs Program.

3.0 Analysis and Determination of GFR

3.1 General

The Base Unit Cost, City Center Index and Remoteness Index when combined with the updated Capital Asset Inventory information yields an O&M Gross Funding Requirement (GFR) by facility type, remoteness and region. By aggregating the GFR for each facility type, remoteness and region a departmental GFR is established..

Comparative analyses of 1985 and 1986 data with respect to funding requirements and inventory data have resulted in a number of observations. Changes in the GFR can generally be attributed to any or all of the following major factors:

1. Changes in the base operating and maintenance unit costs and City Center Indices;
2. Changes in the actual assets inventoried.
3. A change in the number of municipal type agreements reported by regions for the provision of municipal type services.
4. The internal realignment of assets due to more precise asset definition and/or subdivision of an asset classification.

The GFR increased \$7.7 million or 6.6% over last year. That total GFR figure, examined on a regional basis, showed increases as well as decreases. The majority of the increase is due to an increase in municipal type agreements. All regions have had increases this year in municipal agreements. The prime reason is the increase in scope of what is allowable under Municipal Agreements this year (see section 3.3.8 for further details on Municipal Agreements). The other factor in the overall GFR increase is the increase in Unit O&M Costs (see Table 4 for details). Those increases are directly attributable to inflationary rises in the costs that comprise the O&M Unit Costs.

Another contributor to the change in GFR figures has been the review and subsequent revision of various asset classifications. During the ongoing review process it was determined that some assets were being considered together but should be separate entities and funded accordingly. A prime example of this is the differentiation this year between modified and unmodified vehicles.

In past years vehicles were funded at a flat rate based on the purpose they fulfilled (e.g. a refuse collection truck). This year the change has been made to account for general purpose vehicles being used to meet the requirement. For example, if a band used a pickup truck to collect garbage that vehicle would have the GFR calculated on the basis of a base cost of \$17,076 as compared to a base cost of \$30,783 for a compactor type refuse collection vehicle. Similar changes have also been made in the water, waste water and solid waste areas.

3.2 Analysis by Region

3.2.1 Atlantic

The 37.7% or \$1.2 million increase in GFR is founded on an increase in Municipal Agreements totaling \$726,200. This accounts for over 60% of the total GFR increase. Water Supply and Waste Water have also increased a total of \$264,300. As with other regions construction of new water and sewer systems is a high priority and as a result the inventory in this area is continually increasing. The region has also identified approximately 33,000 meters of water mains that were excluded from last years inventory due to a misunderstanding of asset definition. In the Atlantic there is a drop in Vehicle GFR due to a more precise definition of asset types. This refinement has resulted in a drop in Vehicle GFR for the Atlantic Region of almost \$40,000.

3.2.2 Quebec

The Quebec Region during the past year has put a great deal of emphasis on ensuring that their asset inventory is up to date and that all assets are included. That re-inventory process when combined with increase in new assets in buildings area and clarification of ownership and responsibility for roads resulted in a 17.3% overall increase in GFR or \$1,945,800 more than in 1985. The building inventory increased by 9355 square meters in schools and 12,833 square meters in recreational buildings which in turn upped the GFR by \$1.5 million. The large increase in recreational buildings is due to reclassification by the region. That reclassification meant the inclusion of assets that were excluded last year. Transportation and Municipal Agreements contributed a combined total of almost \$350,000 to the increase in GFR. On the other hand solid waste and electrical power together decreased almost \$100,000.

3.2.3 Ontario

The Ontario GFR has increased 8.7% over last year. As with other regions the increase is due partly to a significant increase in the value of Municipal Agreements. Other changes in GFR result in a net \$822,000 increase.

On an individual facility type basis, the changes have been dramatic. For example, the GFR for Solid Waste has decreased by 57% due to the realignment of inventory from landfill sites to simple garbage dumps. Waste Water Collection on the other hand has increased by over 76% (\$225,800) due to re-inventory and the addition of new inventory from new construction.

3.2.4 Manitoba

Manitoba's GFR has grown over 7% from its 1985 figure of \$22,719,700. This growth is principally attributable to the identification of Municipal Agreements in the region. Last year none were identified. In 1986 the region has identified over \$1.3 million in agreements. The regions total increase was only \$1.4 million.

An increase in GFR for Buildings of over \$1 million, almost 8%, was recorded principally due to new inventory and refinement of existing inventory information. That increase was offset by decreases in other facility types. In Transportation there was a decrease of 97 kilometers in road inventory resulting in an almost 5% decrease in GFR. Vehicles on the other hand had an inventory increase of 3 vehicles but due to realignment the GFR decreased by over 7%. Both Waste Supply and Waste Water also had inventory decreases that lowered their GFRs. Again the decreases were due to a refinement of inventory information.

3.2.5 Saskatchewan

A modest 5.2% increase in GFR for buildings (up \$716,400 over last years \$13,214,800) coupled with a similar dollar value increase in Municipal Agreements (\$569,300) were principal factors in the \$1,365,800 increase in total GFR. That value represents an increase in the region's GFR of 5.2%. The other smaller increases in remaining facilities was virtually offset by an approximate 47% decrease in solid waste due to re-inventory with the refinement of the definitions for assets classified under solid waste.

3.2.6 Alberta

The Alberta Region has shown a 3.9% decrease in GFR over last year. There were decreases in two of the seven facility areas (Buildings and Vehicles) with the remainder exhibiting minor increases. Buildings virtually makes up the entire decrease. The decrease is primarily due to a decrease in the educational building inventory with schools alone decreasing by over 5,000 square meters. The decrease in inventory is due to replacement of older schools with new ones. Last year several new schools were brought on line but for operational reasons the old schools were kept running concurrent with the new schools. Those old schools have been decommissioned this year with the resultant decrease in inventory. The decreases in inventory combined with lower City Center Indices caused by poor economic conditions (ie lower labour rates) and a decrease in the price of petroleum products (ie lower energy rates), has caused the GFR to decrease.

3.2.7 British Columbia

The B.C. Region has had increases of over \$900,000 in one category (Buildings) and a decrease of over \$650,000 in another (Vehicles). The increase in buildings can be traced to a 16% increase in school area due to new construction and work on the region's part in ensuring that all assets were taken into account. Increases are found in the other facility classes for similar reasons. Even in vehicles where the region experienced an almost 55% decrease in GFR funding level, the actual asset count went up. The funding decrease is due to the realignment of vehicles into their appropriate classes.

3.2.8 Yukon

The Yukon was the only other region besides Alberta to register a decreased overall GFR this year. Once again the reason for the changes is the effort the region put into updating its inventory. The changes that most affected the GFR were the clarifications to the water supply inventory which resulted in a \$397,100 decrease in funding level; and to the vehicle inventory which reduced the funding level in that area by \$172,300.

3.3 Analysis by Facility

3.3.1 General

On a macro level the GFRs by facility type fluctuated within what are considered as acceptable norms. There was a total increase of \$7,703,200 in GFR over the 1985 value. By facility type the changes ranged from an increase of \$5,053,900 or 8.3% in buildings to a decrease of \$1,923,100 or 16.4% in Vehicles. Municipal Agreements also demonstrated a significant 141.6% increase but, as detailed in 3.3.8 below, the increase was due primarily to a change in the definition and scope of what constitutes a municipal agreement.

Changes in definition also impacted on the GFR of other facilities. Due to a redefinition and change in scope of Vehicles and Solid Waste, those facility types both had decreases in GFR. This is in spite of actual asset count increases in both categories. The realignment of assets to a less heavily funded classification accounts for the difference.

Other asset classes were also redefined but the changes in GFR were not as noticeable. For example water mains were split into heated and unheated. This more precise definition provides details on what exists in the regions.

3.3.2 Buildings

Overall the GFR for buildings has increased by 8.3%, from \$60,819,700 to \$65,863,600. On a region by region basis there have been increases and decreases in GFR. In Quebec Region for example, GFR has increased 35.9% to the 1986 total of \$5,519,300. This is directly attributable to a dramatic increase in the inventory because of new construction as well as re-inventory of existing assets. The Alberta Region on the other hand shows a decrease of 8.9%. This is due to decreases in inventory as well as decreases in City Center Indices because of the down turn in the western economy and subsequent decreases in labour rates.

3.3.3 Water Supply and Waste Water Collection

The GFR for Water Supply has shown a 3.7% decrease over last years figure while Waste Water has increased by 11.6%. The net effect is an overall GFR increase of 0.5% for the combined Water Supply and Waste Water Collection. Substantial decreases in reservoirs, pumphouses and treatment facilities in Ontario combined with the elimination of all pumphouses in the Yukon and general decreases to the Manitoba inventory accounted for the decrease in GFR in Water Supply.

Only Manitoba has had a decrease in GFR with respect to Waste Water. Their total decrease amounts to just over \$150,000. The other regions had increases ranging from \$9,500 in Saskatchewan to just over \$225,000 in Ontario. The net effect is a 11.6% increase over last year's GFR for Waste Water Collection.

3.3.4 Solid Waste

The GFR for solid waste has decreased over \$550,000 from last year. This 21% decrease can be directly attributed to the refinement of the definitions used under this asset type. In past years only landfill sites were considered. This year the differentiation was made between landfill sites and garbage dumps as well as manual incineration. That refinement along with regions reassignment of assets to the proper categories resulted in the overall decrease. Ontario and Saskatchewan contributed the most to the decrease with differences of over \$400,000 and \$300,000 respectively. Quebec had a \$13,600 decrease while other regions had relatively minor increases.

3.3.5 Transportation

The GFR for O&M for Transportation is calculated differently from other facilities. Maintenance of roads is segregated into 23 activities and unit costs are determined for each. Using the detailed breakdown of maintenance activities and considering only the maintenance activities performed in each Region as well as the frequency with which each activity is performed the GFR calculations are more accurate and indicative of regional requirements.

The national GFR for Transportation is up 4.6% from last year. This increase is primarily due to increases in costs with increases in inventory having a lesser impact. As with other facilities marked changes in inventory were confirmed with the regions. More conscientious effort in the inventory process is the main cause for the changes. However, there were also some regional factors that also entered into the picture. In Quebec for example, the increase is due to a clarification of ownership/responsibility of the roads by the bands. Other factors identified were new construction exclusion of roads under municipal agreements; and deletions of trails originally identified as roads.

3.3.6 Electrical Power

Electrical generation costs have increased by \$200,000 or 4%. This small increase is due to the combined effects of fluctuations in fuel costs and decreases in the fuel efficiency factors for small diesel generators. For example while fuel prices decreased in B.C., the fuel efficiency factor also decreased thereby increasing the cost per KWH generated. The two factors negated themselves resulting in virtually stable GFR.

Changes were also made to the asset definitions in this facility type. This year there was a differentiation made between Transmission Lines and Distribution Lines with Transmission Lines in Ontario having lower unit base cost. In addition street lighting was considered as a separate item reducing the unit cost of Distribution Lines. This combined to produce a 7.4% decrease in GFR for Distribution Lines from the 1985 figure.

The combination of a minor increase in generation costs and a slight decrease in distribution/transmission costs resulted in a 2.9% overall increase in GFR.

3.3.7 Vehicles

The GFR for vehicles has taken a substantial decrease of over 16% from the 1985 figure. All regions with the exception of Quebec have decreases of between 2% and 55% with respect to last years GFR. The cumulative reduction is the result of two contributing forces: the redefinition within the vehicles category to include unmodified vehicles; and the relative decreases in the labour and fuel components making up the major part of the Vehicle GFRs.

3.3.8 Municipal Agreements

Prior to last year, arrangements between bands and other levels of government for the purchase of services were not included in the GFR calculations. It was decided in 1985 that in fact these agreements did form part of the actual O&M funding requirements and should be included in the calculations. As a result regions were asked to supply information on the "municipal type" (ie water and sewer) agreements they had in place. The GFR for those agreements was \$2,787,200.

In order to make the GFR calculations more fully representative of the true regional requirements, this year it was decided to include actual agreements in place. The agreements to be listed would now include road maintenance, street lighting and fire agreements in addition to more typical municipal agreements for the provision of water, sewage disposal and solid waste collection and disposal.

The GFR for municipal type agreements increased by 245% over last year to a total of \$6,833,700. This increase is due to several factors. The most important being the increase in agreements included under the current definition. This alone accounts for almost \$2 million of the \$4 million increase. The remainder of the increase is a result of the increased effort on the part of the regions to identify all agreements.

Saskatchewan has reported the largest dollar value in agreements with a cost of \$2,323,800 (a 32.4% increase in three agreements). On the other hand B.C. has reported the largest number of agreements with 230 but with a dollar value of only \$573,700 representing a 148.9% increase.

4.0 Conclusions

Based on our computations, the Gross Funding Requirement is \$124.8 million in 1986/87 dollars. This amount is the total funding requirement. The net amount of the department's obligations would be reduced from that figure by funds obtained from other sources.

Over the past years we have been steadily improving upon the methodology used to calculate the base unit costs and the City Center and Remoteness Indices. We have also expanded upon the actual asset definitions to ensure that assets are assigned the appropriate funding. With those enhancements and the use of actual asset as opposed to summary asset information we are confident that this year's GFR is a precise reflection of the gross funding required to maintain the assets identified by regions.

It is concluded therefore that the 6.6% increase in GFR over last years total is representative and that the GFR to maintain departmentally funded assets is \$124.8 million.

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	ATLANTIC	QUEBEC	ONTARIO	MANITOBA	SASKATCHEWAN	ALBERTA	B.C.	YUKON	NATIONAL	CHANGE
	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Asset Totals	Over 1985
Solid Waste(ea)										

Landfill	3	11	21	41	27	41	72	0	216	-123
Refuse Site	0	0	66	9	80	6	0	0	161	NA
Incineration	0	1	0	0	2	1	0	0	4	NA
Electrical Power										

Dist'n/Transm'n(km)	0	66	75	0	0	0	15	1	157	65
Street Lighting(fixture)	0	62	33	0	0	0	0	0	95	NA
Generators(ea)	0	6	12	0	0	0	27	1	46	NA
Transportation(km)										

Roads	110	253	1682	1254	2264	2074	928	62	8627	104
Vehicles(ea)										

Mini-pumper	1	0	12	7	28	1.00	57	0	106	43
Triple-pumper	12	8	42	8	5	25	7	0	107	-8
Refuse Collection Truck	0	7	3	7	0	29	1	2	49	-81
Refuse Coll'n Tr (Unmod)	0	6	11	18	21	1	3	0	60	NA
Liquid Waste Collection	0	0	1	7	4	18	0	2	32	4
Liquid Waste Coll'n (Unmod)	1	0	0	2	0	0	0	0	3	NA
Water Delivery	0	0	1	52	23	32	0	5	113	-11
Water Delivery (Unmod)	0	0	2	4	0	1	0	0	7	NA

Table 2A

CITY CENTRE INDICES

BUILDING TYPES

CITY CENTRE	SCHOOL	TEACHERAGE	STUDENT RESIDENCE	DAY CARE CENTRE	OTHER INSTITUTIONAL	RECREATIONAL	UTILITY	INDUSTRIAL	ADMINISTRATION	FIRE HALLS
Halifax	0.95	0.99	0.97	0.95	0.94	1.02	0.93	1.00	0.98	0.97
Sydney	1.05	1.31	1.03	1.05	1.20	1.13	1.19	1.22	1.19	1.25
Moncton	1.07	1.08	1.05	1.07	1.09	1.11	1.10	1.15	1.14	1.16
Fredericton	1.07	1.35	1.04	1.07	1.23	1.15	1.30	1.29	1.27	1.41
Quebec City	1.29	1.54	1.13	1.29	1.52	1.21	1.78	1.33	1.41	1.70
Montreal	1.15	1.15	1.05	1.15	1.23	1.09	1.32	1.13	1.18	1.25
Rouyn	1.39	1.83	1.20	1.39	1.69	1.30	2.07	1.48	1.57	2.00
Sept-Îles	1.46	1.95	1.23	1.46	1.78	1.34	2.24	1.52	1.64	2.14
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	1.05	1.17	1.01	1.05	1.15	1.01	1.17	1.08	1.09	1.16
London	0.95	0.86	0.97	0.95	0.88	0.90	0.88	0.85	0.87	0.85
Sault-Ste-Marie	1.06	1.31	1.03	1.06	1.21	1.06	1.25	1.17	1.17	1.26
Thunder Bay	1.35	1.55	1.19	1.35	1.55	1.21	1.67	1.30	1.41	1.53
Sudbury	1.24	1.41	1.13	1.24	1.40	1.16	1.43	1.24	1.30	1.42
Timmins	1.39	1.59	1.22	1.39	1.59	1.27	1.70	1.35	1.45	1.64
Winnipeg	1.27	1.71	1.11	1.27	1.54	1.15	1.86	1.35	1.44	1.85
Thompson	1.53	2.74	1.25	1.53	2.01	1.36	3.05	1.67	1.83	2.98
The Pas	1.42	2.17	1.19	1.42	1.79	1.27	2.42	1.52	1.65	2.37
Brandon	1.31	1.75	1.13	1.31	1.58	1.18	1.91	1.36	1.47	1.87
Regina	1.42	1.68	1.18	1.42	1.65	1.28	1.85	1.37	1.51	1.60
Saskatoon	1.40	1.77	1.19	1.40	1.66	1.31	1.85	1.43	1.55	1.65
Prince Albert	1.58	2.05	1.28	1.58	1.90	1.41	2.28	1.54	1.72	2.21
Calgary	1.13	1.20	1.03	1.13	1.22	1.09	1.23	1.14	1.19	1.26
Edmonton	1.26	1.58	1.09	1.26	1.50	1.20	1.67	1.31	1.40	1.67
High Level	1.46	2.32	1.20	1.46	1.86	1.42	2.44	1.64	1.75	2.48
Port McMurray	1.44	2.29	1.18	1.44	1.86	1.37	2.44	1.57	1.69	2.40
Vancouver	0.98	0.71	1.00	0.98	0.75	0.89	0.81	0.75	0.76	0.74
Victoria	0.91	0.65	0.96	0.91	0.67	0.85	0.74	0.69	0.69	0.68
Kamloops	1.30	0.96	1.16	1.30	1.24	1.10	1.31	1.02	1.14	1.12
Prince George	1.39	1.11	1.20	1.39	1.48	1.19	1.67	1.20	1.34	1.45
Prince Rupert	1.16	0.94	1.10	1.16	1.07	1.05	1.09	0.95	1.02	0.98
Whitehorse	1.55	3.06	1.32	1.55	2.16	1.62	2.89	1.93	1.99	2.96
St. John's	0.96	1.09	0.99	0.96	0.98	1.02	0.92	1.05	1.00	1.00
	0.99	1.12	1.02	0.99	1.01	1.05	0.95	1.06	1.03	1.03
	1.08	1.34	1.06	1.08	1.23	1.16	1.22	1.25	1.22	1.29

Table 2B

CITY CENTRE INDICES

WATER SUPPLY

CITY CENTRE	WATER MAINS	HEATED MAINS	STORAGE	STAND PIPES	COMMUNITY WELL	PUMPHOUSES		TREATMENT	
						LOW LEVEL	HIGH LEVEL	SYSTEM	UNIT
Halifax	1.00	1.31	0.98	1.02	1.09	1.08	1.08	1.01	1.01
Sydney	0.99	1.31	0.97	1.01	1.08	1.07	1.07	1.00	1.00
Moncton	1.00	1.26	0.99	1.02	1.07	1.06	1.06	1.00	1.00
Fredericton	1.00	1.17	0.97	1.02	1.04	1.03	1.03	0.98	0.98
Quebec City	1.04	0.85	1.00	1.05	0.97	0.97	0.97	0.99	0.99
Montreal	1.02	0.85	0.99	1.03	0.96	0.96	0.96	0.97	0.97
Rouyn	1.06	0.85	1.04	1.06	0.99	0.99	0.99	1.01	1.01
Sept-Îles	1.09	0.85	1.09	1.09	1.01	1.01	1.01	1.05	1.05
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.97	0.76	0.94	0.97	0.89	0.90	0.90	0.93	0.93
London	1.02	0.77	1.02	1.02	0.94	1.00	0.95	0.99	0.99
Sault-Ste-Marie	1.04	0.88	1.02	1.04	0.99	1.00	1.00	1.02	1.02
Thunder Bay	1.11	0.75	1.11	1.10	0.99	1.00	1.00	1.07	1.07
Sudbury	1.05	0.88	1.05	1.05	1.00	1.00	1.00	1.03	1.03
Timmins	1.06	0.88	1.05	1.05	1.00	1.01	1.01	1.03	1.03
Winnipeg	1.04	0.62	1.06	1.04	0.87	0.88	0.88	0.96	0.96
Thompson	1.06	0.62	1.08	1.06	0.83	0.90	0.90	0.98	0.98
The Pas	1.06	0.62	1.08	1.06	0.88	0.90	0.90	0.98	0.98
Brandon	1.05	0.62	1.08	1.05	0.87	0.89	0.89	0.98	0.97
Regina	1.09	0.98	1.16	1.07	1.04	1.04	1.04	1.08	1.08
Saskatoon	1.09	1.09	1.14	1.09	1.08	1.07	1.07	1.08	1.08
Prince Albert	1.13	0.98	1.19	1.12	1.07	1.06	1.06	1.10	1.10
Calgary	1.08	1.05	1.14	1.07	1.06	1.05	1.05	1.08	1.08
Edmonton	1.02	1.00	1.07	1.02	1.00	1.00	1.00	1.01	1.01
High Level	1.04	1.16	1.08	1.04	1.07	1.06	1.06	1.04	1.04
Port McMurray	1.04	1.00	1.08	1.03	1.01	1.01	1.01	1.02	1.02
Vancouver	1.18	0.82	1.21	1.16	1.05	1.05	1.05	1.13	1.13
Victoria	1.12	0.82	1.15	1.12	1.01	1.01	1.01	1.07	1.07
Kamloops	1.22	0.62	1.24	1.20	1.01	1.02	1.02	1.14	1.14
Prince George	1.16	0.62	1.18	1.15	0.95	0.98	0.98	1.07	1.07
Prince Rupert	1.16	0.82	1.18	1.15	1.03	1.04	1.04	1.10	1.10
Whitehorse	1.08	1.41	1.11	1.10	1.17	1.18	1.18	1.13	1.13
St. John's	1.02	1.28	0.99	1.05	1.10	1.08	1.08	1.02	1.02

Table 2C

CITY CENTRE INDICES

WASTEWATER AND SOLID WASTE

CITY CENTRE	GRAVITY MAINS	LIFT STATIONS	RBC/TF*	EXTENDED AERATION	LAGOONS CONV.	AERATED	HOLDING TANK	JET/ DISPOSAL	LANDFILL SITE	REFUSE SITE	INCINERATION
Balifax	1.02	1.09	1.00	1.02	0.97	1.01	0.99	1.02	0.99	0.99	1.02
Sydney	0.99	1.07	0.99	1.00	0.95	1.00	0.96	1.01	0.98	0.98	1.00
Moncton	1.01	1.07	0.99	1.00	0.97	1.00	0.98	1.02	0.99	0.99	1.02
Fredericton	1.01	1.04	0.98	0.99	0.96	0.98	0.98	1.00	0.99	0.99	1.01
Quebec City	1.04	0.98	1.01	1.00	1.02	1.00	1.03	1.00	1.05	1.05	1.03
Montreal	1.02	0.97	0.99	0.99	1.00	0.98	1.01	0.99	1.03	1.03	1.01
Rouyn	1.06	1.00	1.03	1.02	1.05	1.02	1.06	1.03	1.07	1.07	1.04
Sept-Îles	1.09	1.02	1.07	1.06	1.10	1.06	1.10	1.06	1.10	1.10	1.08
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.96	0.90	0.94	0.93	0.94	0.92	0.95	0.93	0.96	0.96	0.93
London	1.03	0.95	1.01	1.00	1.03	1.00	1.03	1.00	1.03	1.03	1.01
Sault-Ste-Marie	1.05	1.00	1.03	1.02	1.03	1.01	1.04	1.02	1.04	1.04	1.02
Thunder Bay	1.12	1.00	1.08	1.07	1.12	1.07	1.12	1.07	1.12	1.12	1.09
Sudbury	1.06	1.00	1.04	1.03	1.05	1.03	1.06	1.03	1.06	1.06	1.04
Timmins	1.06	1.01	1.04	1.03	1.05	1.03	1.06	1.03	1.06	1.06	1.04
Winnipeg	1.06	0.89	0.98	0.96	1.02	0.96	1.02	0.98	1.01	1.01	0.98
Thompson	1.08	0.91	1.00	0.98	1.04	0.97	1.04	1.00	1.03	1.03	0.99
The Pas	1.08	0.91	1.00	0.98	1.04	0.97	1.04	1.00	1.03	1.03	0.99
Brandon	1.08	0.90	0.99	0.97	1.03	0.97	1.04	1.00	1.02	1.02	0.99
Regina	1.10	1.05	1.08	1.08	1.13	1.09	1.10	1.10	1.07	1.07	1.08
Saskatoon	1.11	1.08	1.08	1.08	1.10	1.08	1.09	1.10	1.07	1.07	1.08
Prince Albert	1.14	1.07	1.11	1.11	1.15	1.11	1.13	1.13	1.11	1.11	1.11
Calgary	1.11	1.07	1.08	1.08	1.11	1.08	1.10	1.10	1.07	1.07	1.09
Edmonton	1.05	1.01	1.01	1.01	1.03	1.01	1.03	1.03	1.00	1.00	1.01
High Level	1.06	1.07	1.04	1.04	1.04	1.04	1.04	1.06	1.01	1.01	1.03
Port McMurray	1.06	1.02	1.02	1.02	1.04	1.02	1.04	1.04	1.01	1.01	1.02
Vancouver	1.19	1.06	1.15	1.14	1.20	1.14	1.19	1.15	1.18	1.18	1.17
Victoria	1.13	1.02	1.09	1.08	1.13	1.08	1.12	1.09	1.11	1.11	1.09
Kamloops	1.24	1.04	1.17	1.15	1.24	1.15	1.24	1.16	1.22	1.22	1.19
Prince George	1.17	0.98	1.10	1.08	1.15	1.08	1.15	1.09	1.14	1.14	1.10
Prince Rupert	1.17	1.04	1.11	1.10	1.15	1.10	1.15	1.12	1.14	1.14	1.12
Whitehorse	1.09	1.15	1.08	1.09	1.04	1.09	1.04	1.10	1.01	1.01	1.07
St. John's	1.03	1.09	1.01	1.02	0.98	1.01	1.00	1.03	1.01	1.01	1.04

* Rotating biological contactors/trickling filters

Table 2D

CITY CENTRE INDICES

ELECTRICAL POWER SUPPLY AND DISTRIBUTION

CITY CENTRE	DISTRIBUTION	STREET LIGHTING
Halifax	1.01	1.00
Sydney	0.96	0.96
Moncton	0.99	0.99
Fredericton	1.00	1.00
Quebec City	1.08	1.07
Montreal	1.04	1.04
Rouyn	1.08	1.08
Sept-Îles	1.12	1.11
Toronto	1.00	1.00
Ottawa	0.95	0.96
London	1.04	1.04
Sault-Ste-Marie	1.08	1.08
Thunder Bay	1.14	1.13
Sudbury	1.08	1.07
Timmins	1.09	1.08
Winnipeg	0.99	0.98
Thompson	1.02	1.02
The Pas	1.02	1.02
Brandon	1.01	1.00
Regina	1.01	1.01
Saskatoon	1.03	1.03
Prince Albert	1.05	1.05
Calgary	1.06	1.04
Edmonton	0.98	0.97
High Level	0.99	0.99
Port McMurray	0.99	0.99
Vancouver	1.18	1.16
Victoria	1.09	1.08
Kamloops	1.26	1.24
Prince George	1.12	1.11
Prince Rupert	1.12	1.11
Whitehorse	1.03	1.03
St. John's	1.04	1.03

Table 2E

CITY CENTRE INDICES

VEHICLES

CITY CENTRE	MINI POMPER	TRIPLE POMPER	REFUSE COLLECTION TRUCK	REFUSE COLLECTION TRUCK *	LIQUID WASTE COLLECTION	LIQUID WASTE COLLECTION *	WATER DELIVERY	WATER DELIVERY *
Halifax	0.99	1.01	1.05	1.05	1.05	1.05	1.05	1.05
Sydney	0.99	1.00	1.05	1.05	1.05	1.05	1.05	1.05
Moncton	0.99	1.01	1.05	1.05	1.06	1.06	1.06	1.06
Fredericton	1.00	1.01	1.08	1.08	1.08	1.08	1.08	1.08
Quebec City	1.05	1.06	1.09	1.09	1.10	1.10	1.10	1.10
Montreal	1.04	1.05	1.08	1.08	1.08	1.08	1.08	1.08
Bouyn	1.07	1.07	1.09	1.09	1.09	1.09	1.09	1.09
Sept-Îles	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.97	0.98	1.00	1.00	1.00	1.00	1.00	1.00
London	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Sault-Ste-Marie	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
Thunder Bay	1.11	1.11	1.11	1.11	1.12	1.12	1.12	1.12
Sudbury	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.06
Timmins	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.06
Winnipeg	1.01	1.01	1.04	1.04	1.04	1.04	1.04	1.04
Thompson	1.03	1.03	1.05	1.05	1.05	1.05	1.05	1.05
The Pas	1.03	1.03	1.05	1.05	1.05	1.05	1.05	1.05
Brandon	1.02	1.02	1.04	1.04	1.05	1.05	1.05	1.05
Regina	1.07	1.05	1.02	1.02	1.01	1.01	1.01	1.01
Saskatoon	1.06	1.06	1.04	1.04	1.04	1.04	1.04	1.04
Prince Albert	1.11	1.10	1.08	1.08	1.08	1.08	1.08	1.08
Calgary	1.05	1.04	1.03	1.03	1.03	1.03	1.03	1.03
Edmonton	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98
High Level	1.00	1.00	0.98	0.98	0.98	0.98	0.98	0.98
Fort McMurray	1.00	1.00	0.98	0.98	0.98	0.98	0.98	0.98
Vancouver	1.17	1.17	1.16	1.16	1.16	1.16	1.16	1.16
Victoria	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Kamloops	1.20	1.20	1.19	1.19	1.19	1.19	1.19	1.19
Prince George	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15
Prince Rupert	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15
Whitehorse	1.01	1.02	1.04	1.04	1.04	1.04	1.04	1.04
St. John's	1.02	1.04	1.09	1.09	1.10	1.10	1.10	1.10

* UNMODIFIED VEHICLE

Table 2P

CITY CENTRE INDICES

ROADS AND BRIDGES

CITY CENTRE	GRADING	GRAVEL		DUST CONTROL CaCl ₂	CULVERT		LITTER PICKUP	VEGETATION CONTROL
		PATCHING	GRAVELLING		REPAIR/ REPLACE	INSPECT/ CLEAN		
Balifax	0.98	0.99	1.06	0.99	0.99	0.95	0.95	0.95
Sydney	1.02	1.04	1.08	1.04	1.03	1.02	1.02	1.02
Moncton	0.98	0.99	1.06	0.99	0.99	0.96	0.96	0.96
Fredericton	0.96	0.97	1.06	0.97	0.97	0.91	0.91	0.92
Quebec City	1.06	1.04	1.01	1.04	1.04	1.04	1.04	1.04
Montreal	1.05	1.03	1.00	1.03	1.03	1.02	1.02	1.03
Rouyn	1.09	1.08	1.05	1.08	1.08	1.09	1.09	1.09
Sept-Îles	1.17	1.16	1.08	1.16	1.17	1.23	1.23	1.22
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.95	0.94	0.98	0.95	0.94	0.89	0.89	0.90
London	1.03	1.03	1.01	1.03	1.03	1.04	1.04	1.04
Sanit-Ste-Marie	1.02	1.02	1.04	1.02	1.02	0.99	0.99	1.00
Thunder Bay	1.13	1.13	1.07	1.12	1.13	1.17	1.17	1.17
Sudbury	1.07	1.07	1.06	1.07	1.07	1.08	1.08	1.08
Timmins	1.06	1.06	1.05	1.06	1.06	1.07	1.07	1.07
Winnipeg	0.99	1.04	1.17	1.03	1.03	0.98	0.98	0.98
Thompson	0.99	1.04	1.20	1.04	1.03	0.97	0.97	0.97
The Pas	0.99	1.04	1.20	1.04	1.03	0.97	0.97	0.97
Brandon	0.97	1.03	1.20	1.03	1.02	0.97	0.97	0.97
Regina	1.09	1.14	1.17	1.13	1.13	1.17	1.17	1.16
Saskatoon	1.04	1.09	1.20	1.08	1.08	1.06	1.06	1.06
Prince Albert	1.16	1.21	1.23	1.20	1.21	1.25	1.25	1.24
Calgary	1.03	1.08	1.15	1.07	1.07	1.10	1.10	1.09
Edmonton	1.01	1.06	1.14	1.06	1.06	1.07	1.07	1.06
High Level	1.02	1.08	1.18	1.07	1.07	1.08	1.08	1.07
Fort McMurray	1.02	1.08	1.18	1.07	1.07	1.08	1.08	1.07
Vancouver	1.17	1.19	1.17	1.18	1.19	1.24	1.24	1.23
Victoria	1.14	1.17	1.19	1.16	1.16	1.19	1.19	1.18
Kamloops	1.19	1.21	1.20	1.20	1.21	1.25	1.25	1.24
Prince George	1.17	1.20	1.24	1.20	1.20	1.21	1.21	1.20
Prince Rupert	1.17	1.20	1.24	1.20	1.20	1.21	1.21	1.20
Whitehorse	1.06	1.13	1.27	1.12	1.11	1.08	1.08	1.07
St. John's	1.01	1.01	1.08	1.01	1.01	0.95	0.95	0.96

Table 2G

CITY CENTRE INDICES

ROADS AND BRIDGES

CITY CENTRE	MOWING	DITCH CLEANING	SIGN MAINT/ REPAIR	GUIDERAIL MAINT/ REPAIR	SNOW PLOWING	SNOW REMOVAL	SANDING & SALTING	CATCHBASIN CLEANING
Halifax	0.95	0.96	0.96	0.97	0.97	0.97	1.03	0.96
Sydney	1.02	1.02	1.02	1.03	1.02	1.02	1.05	1.02
Moncton	0.96	0.97	0.97	0.96	0.97	0.97	1.03	0.96
Fredericton	0.92	0.93	0.93	0.95	0.96	0.96	1.02	0.93
Quebec City	1.04	1.05	1.02	1.01	1.06	1.06	1.03	1.05
Montreal	1.03	1.04	1.01	1.00	1.05	1.05	1.02	1.03
Rouyn	1.09	1.09	1.07	1.06	1.09	1.09	1.07	1.09
Sept-Îles	1.22	1.20	1.19	1.16	1.18	1.18	1.12	1.21
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.90	0.92	0.91	0.92	0.94	0.94	0.97	0.92
London	1.04	1.03	1.04	1.03	1.03	1.03	1.02	1.04
Sault-Ste-Marie	1.00	1.01	1.00	1.01	1.02	1.02	1.03	1.00
Thunder Bay	1.17	1.15	1.16	1.14	1.13	1.13	1.10	1.16
Sudbury	1.08	1.08	1.08	1.07	1.07	1.07	1.06	1.08
Timmins	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.07
Winnipeg	0.98	0.98	0.97	0.96	0.99	0.99	1.09	0.98
Thompson	0.97	0.98	0.96	0.96	0.99	0.99	1.11	0.98
The Pas	0.97	0.98	0.96	0.96	0.99	0.99	1.11	0.98
Brandon	0.97	0.97	0.96	0.95	0.97	0.97	1.11	0.97
Regina	1.16	1.14	1.13	1.09	1.10	1.10	1.14	1.14
Saskatoon	1.06	1.05	1.04	1.01	1.04	1.04	1.13	1.05
Prince Albert	1.24	1.21	1.20	1.16	1.18	1.18	1.21	1.22
Calgary	1.09	1.07	1.05	1.01	1.04	1.04	1.10	1.07
Edmonton	1.06	1.05	1.03	0.99	1.02	1.02	1.09	1.05
High Level	1.07	1.05	1.03	1.00	1.03	1.03	1.12	1.06
Port McMurray	1.07	1.05	1.03	1.00	1.03	1.03	1.12	1.06
Vancouver	1.23	1.21	1.22	1.20	1.18	1.18	1.17	1.22
Victoria	1.18	1.16	1.17	1.15	1.14	1.14	1.17	1.17
Kamloops	1.24	1.22	1.23	1.21	1.20	1.20	1.20	1.23
Prince George	1.20	1.19	1.20	1.18	1.18	1.18	1.21	1.20
Prince Rupert	1.20	1.19	1.20	1.18	1.18	1.18	1.21	1.20
Whitehorse	1.07	1.05	1.04	1.02	1.07	1.07	1.19	1.05
St. John's	0.96	0.97	0.94	0.93	1.00	1.00	1.05	0.97

Table 2B

CITY CENTRE INDICES

ROADS AND BRIDGES

CITY CENTRE	ASPHALT PATCHING	CRACK SEALING	SPRAY PATCHING	SHOULDER GRADING	BRIDGE INSPECTION	BRIDGE CLEANING	BRIDGE MAINT/ REPAIR
Halifax	1.03	1.01	1.00	0.98	0.95	0.99	0.98
Sydney	1.05	1.04	1.04	1.02	1.02	1.03	1.03
Moncton	1.03	1.01	1.00	0.98	0.96	0.99	0.99
Fredericton	1.02	0.99	0.99	0.96	0.92	0.97	0.96
Quebec City	0.95	0.98	1.00	1.06	1.04	1.00	1.00
Montreal	0.95	0.97	0.99	1.05	1.03	0.99	0.99
Rouyn	0.99	1.02	1.04	1.09	1.09	1.04	1.04
Sept-Îles	1.04	1.08	1.10	1.17	1.22	1.13	1.14
Toronto	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ottawa	0.97	0.96	0.96	0.95	0.90	0.93	0.93
London	1.01	1.02	1.02	1.03	1.04	1.03	1.03
Sault-Ste-Marie	1.03	1.03	1.03	1.02	1.00	1.01	1.01
Thunder Bay	1.09	1.11	1.11	1.13	1.17	1.13	1.13
Sudbury	1.06	1.07	1.07	1.07	1.08	1.07	1.07
Timmins	1.06	1.06	1.06	1.06	1.07	1.06	1.06
Winnipeg	0.92	0.93	0.95	0.99	0.98	0.95	0.95
Thompson	0.94	0.95	0.96	0.99	0.97	0.96	0.96
The Pas	0.94	0.95	0.96	0.99	0.97	0.96	0.96
Brandon	0.91	0.93	0.94	0.97	0.97	0.94	0.94
Regina	0.94	0.99	1.01	1.09	1.17	1.05	1.06
Saskatoon	0.91	0.95	0.97	1.04	1.06	0.99	0.99
Prince Albert	0.98	1.04	1.07	1.16	1.24	1.11	1.12
Calgary	0.82	0.89	0.92	1.03	1.09	0.96	0.97
Edmonton	0.81	0.87	0.91	1.01	1.07	0.94	0.95
High Level	0.83	0.89	0.93	1.02	1.07	0.96	0.96
Fort McMurray	0.83	0.89	0.93	1.02	1.07	0.96	0.96
Vancouver	1.10	1.13	1.14	1.17	1.24	1.17	1.18
Victoria	1.09	1.11	1.11	1.14	1.18	1.13	1.14
Kamloops	1.14	1.16	1.17	1.19	1.24	1.19	1.20
Prince George	1.13	1.15	1.15	1.17	1.21	1.17	1.17
Prince Rupert	1.13	1.15	1.15	1.17	1.21	1.17	1.17
Whitehorse	0.90	0.94	0.96	1.06	1.07	0.98	0.99
St. John's	0.88	0.91	0.94	1.01	0.95	0.92	0.92

Table 3

FACILITY TYPE =====	RE MOTENESS INDICES =====			
	ZONE 1 -----	ZONE 2 -----	ZONE 3 -----	ZONE 4 -----
BUILDINGS =====				
Schools	1.00	1.34	1.66	1.89
Teacherages	1.00	1.62	2.46	3.90
Student Residences	1.00	1.63	1.92	2.24
Day Care Centre	1.00	1.34	1.66	1.89
Other Institutions	1.00	1.45	1.71	1.98
Recreational Facilities	1.00	1.17	1.68	1.90
Utilities	1.00	1.31	1.35	1.65
Industrial Plants	1.00	1.48	2.10	2.95
Administrative Buildings	1.00	1.28	1.67	1.90
Fire Halls	1.00	1.35	1.75	2.00
 MUNICIPAL SERVICES =====				
Water Supply -----				
Systems				
- watermains	1.00	1.06	1.20	1.81
- heated	1.00	0.80	1.25	3.00
- storage reservoir	1.00	0.94	1.01	1.29
- standpipes	1.00	1.07	1.24	1.97
Pumphouses				
- community well supply	1.00	1.09	1.31	2.32
- low level	1.00	1.09	1.02	1.31
- high lift	1.00	1.02	1.28	2.30
Treatment Facilities				
- system (conventional)	1.00	0.99	1.13	1.65
- unit (partial)	1.00	0.98	1.12	1.65

Table 3 (cont.)

FACILITY TYPE =====	REMOTENESS INDICES =====			
	ZONE 1 -----	ZONE 2 -----	ZONE 3 -----	ZONE 4 -----
Wastewater -----				
Collection				
- gravity mains	1.00	1.12	1.29	2.05
- forcemains *				
Lift Station	1.00	1.03	1.28	2.33
Treatment and Disposal				
- rotating biological contactor/ trickling filter	1.00	1.03	1.18	1.81
- extended aeration	1.00	1.02	1.18	1.83
- conventional lagoon	1.00	1.01	1.09	1.40
- aerated lagoon	1.00	0.96	1.38	1.48
- septic/holding tank	1.00	1.08	1.21	1.75
- jet/pumping disposal	1.00	1.08	1.21	1.75
Solid Waste -----				
Landfill	1.00	1.07	1.20	1.75
Refuse Site	1.00	1.07	1.20	1.75
Incineration	1.00	1.02	1.14	1.58
Electrical Power -----				
Distribution	1.00	1.37	1.63	2.97
Street Lighting	1.00	1.34	1.61	2.97
TRANSPORTATION =====				
Vehicles -----				
Mini-pumper	1.00	1.02	1.12	1.58
Triple-pumper	1.00	1.04	1.15	1.67
Refuse Collection Truck	1.00	1.04	1.15	1.75
Refuse Coll. Truck (Unmodified)	1.00	1.04	1.15	1.75
Liquid Waste Collection	1.00	1.03	1.15	1.74
Liquid Waste Coll. (Unmodified)	1.00	1.03	1.15	1.74
Water Delivery	1.00	1.03	1.15	1.74
Water Delivery (Unmodified)	1.00	1.03	1.15	1.74

* (Included in liftstation unit cost)

Table 3 (cont.)

FACILITY TYPE =====	RE MOTENESS INDICES =====			
	ZONE 1 -----	ZONE 2 -----	ZONE 3 -----	ZONE 4 -----
Roads and Bridges -----				
Grading	1.00	1.03	1.17	1.78
Gravel Patching	1.00	0.90	1.00	1.35
Gravelling	1.00	0.95	1.02	1.35
Dust Control - CaCl ₂	1.00	0.92	1.04	1.42
Culvert Repair/Replace	1.00	0.91	1.02	1.43
Culvert Inspection/Cleaning	1.00	0.78	0.80	0.85
Litter Pick-up	1.00	0.78	0.80	0.85
Vegetation Control	1.00	0.82	0.86	0.96
Mowing	1.00	0.82	0.86	0.96
Ditch Cleaning	1.00	0.89	0.96	1.22
Sign Maintenance/Repair	1.00	0.81	0.85	0.99
Guiderrail Maintenance/Repair	1.00	0.81	0.87	1.07
Snow Plowing	1.00	1.00	1.12	1.63
Snow Removal	1.00	1.00	1.12	1.63
Sanding and Salting	1.00	0.90	1.04	1.59
Catch Basin Cleaning	1.00	0.88	0.94	1.04
Asphalt Patching	1.00	0.84	0.96	1.19
Crack Sealing	1.00	0.85	0.96	1.16
Spray Patching	1.00	0.92	1.05	1.27
Shoulder Grading	1.00	1.03	1.17	1.78
Bridge Inspection	1.00	0.81	0.83	0.93
Bridge Cleaning	1.00	0.83	0.90	1.18
General Bridge Maintenance/Repair	1.00	0.82	0.89	1.15

Table 4

O&M UNIT COSTS (TORONTO = BASE)

Buildings	UNIT	COST	CHANGE	Over 1985

Schools	sq. m	\$38.28	\$2.19	
Teacherages	sq. m	\$9.66	\$0.00	
Student Residences	sq. m	\$34.38	\$1.95	
Day Care Centres	sq. m	\$38.28	\$2.19	
Recreational	sq. m	\$19.64	\$1.11	
Utility	sq. m	\$12.83	(\$1.05)	
Industrial	sq. m	\$11.51	\$0.00	
Administrative	sq. m	\$31.16	\$1.76	
Fire Halls	sq. m	\$17.66	\$1.00	

Water Supply				

Systems				
- watermains-unheated	m	\$1.65	\$0.05	
-heated	m	\$0.70	NA	
- storage reservoirs	ea	\$475.00	\$15.00	
- standpipes	ea	\$240.00	\$10.00	
Pumphouses				
- community well	ea	\$2,700.00	NA	
- low level lift	ea	\$2,700.00	\$100.00	
- high lift	ea	\$7,500.00	\$300.00	
Treatment Facilities				
- system (conventional)	ea	\$26,600.00	\$900.00	
- unit (partial)	ea	\$3,000.00	\$1,800.00	

Wastewater				

Collection				
- gravity mains	m	\$0.98	\$0.03	
Lift Stations	ea	\$4,900.00	\$200.00	
Treatment and Disposal				
- RBC/trickling filter	ea	\$15,900.00	\$500.00	
- extended aeration	ea	\$23,300.00	\$800.00	
- sewage lagoon	ea	\$3,800.00	\$0.00	
- aerated lagoon	ea	\$5,700.00	NA	
- septic/holding tank	ea	\$240.00	\$10.00	
- jet/pumping disposal	ea	\$575.00	NA	

Table 4 (cont'd)

O&M UNIT COSTS (TORONTO = BASE)

	UNIT	COST 1986/87	CHANGE Over 1985
Solid Waste			

Landfill	ea	\$6,200.00	\$200.00
Refuse Site	ea	\$1,530.00	NA
Incineration	ea	\$2,200.00	NA
Electrical Power			

Distribution/Transmission	km	\$1,754.00	(\$2,072.00)
Street Lighting	fixture	\$82.16	NA
Generators		Note 1	Note 1
Transportation			

Roads	km	Note 1	Note 1
Vehicles			

Mini-pumper	ea	\$5,076.00	\$216.00
Triple-pumper	ea	\$5,725.00	\$263.00
Refuse Collection Truck	ea	\$30,783.00	\$783.00
Refuse Coll'n Tr (Unmod)	ea	\$17,076.00	NA
Liquid Waste Collection	ea	\$30,098.00	\$847.00
Liquid Waste Coll'n (Unmod)	ea	\$17,076.00	NA
Water Delivery	ea	\$29,878.00	\$837.00
Water Delivery (Unmod)	ea	\$17,076.00	NA

Note 1: No listing is shown due to the method by which this item is counted and O&M costs estimated. See TSD-19-1 for full details to calculate costs.

TABLE 5

[illegible]

	ATLANTIC GFR Totals	QUEBEC GFR Totals	ONTARIO GFR Totals	MANITOBA GFR Totals	SASKATCHEWAN GFR Totals	ALBERTA GFR Totals	B.C. GFR Totals	YUKON GFR Totals	NATIONAL GFR Totals	CHANGE Over 1985
Solid Waste										

Landfill	19.3	79.2	171.6	348.7	229.9	298.1	607.9	0.0	1754.8	(889.3)
Refuse Site	0.0	0.0	145.4	19.2	148.2	9.8	0.0	0.0	322.6	NA
Incineration	0.0	2.6	0.0	0.0	4.9	3.6	0.0	0.0	11.0	NA
		81.8	317.0	367.9	383.0	311.5	607.9			
Electrical Power										

Dist'n/Transm'n	0.0	343.7	228.9	0.0	0.0	0.0	75.7	2.9	650.9	2 (297.4)
Street Lighting	0.0	15.1	219.8	0.0	0.0	0.0	0.0	0.0	430.1	2 (297.4)
Generators	0.0	2636.7	1484.8	0.0	0.0	0.0	1252.8	50.0	5424.2	2 (220.2)
		2,995.5	1,721.7				1,328.5	52.7	6098.2	
Transportation(km)										

Roads	364.5	706.3	4979.8	2970.4	4172.0	4183.4	2738.8	148.0	20263.0	886.5
Vehicles										

Mini-pumper	5.1	0.0	78.6	45.3	166.6	5.2	372.5	0.0	673.3	1 295.5
Triple-pumper	70.6	50.0	260.0	47.4	35.6	157.3	60.7	0.0	681.7	1 (46.2)
Refuse Collection Truck	0.0	248.6	97.0	303.1	0.0	943.3	59.8	70.1	1721.9	2 (3,451.7)
Refuse Coll'n Tr (Unmod)	0.0	114.0	364.9	370.6	442.4	29.3	71.8	0.0	1392.9	2 NA
Liquid Waste Collection	0.0	0.0	32.9	246.5	131.0	546.7	0.0	64.5	1021.6	2 76.5
Liquid Waste Coll'n (Unmod)	18.5	0.0	0.0	49.0	0.0	0.0	0.0	0.0	67.4	2 NA
Water Delivery	0.0	0.0	32.6	2070.3	825.3	1005.7	0.0	162.8	4096.7	2 (435.7)
Water Delivery (Unmod)	0.0	0.0	37.8	111.5	0.0	29.1	0.0	0.0	178.4	2 NA
Municipal Type Agreements	928.2	392.4	877.3	1310.2	2323.8	327.8	573.7	97.3	6830.7	1 4,043.5
REGIONAL TOTALS	4314.8	10779.1	22638.6	24357.6	25604.1	18941.8	16269.2	1902.6	124807.8	7,715.7
				535.7					535.7	
				24893.3					125,343.5	

Educ. 1 2 3 Tot.
 GFR 42,418.0 31,634.3 29,658.1 21,661.4 125,371.8

1986/87

GPR BY REMOTENESS CATEGORY

TABLE 6

(\$000's)

	ZONE I	ZONE II	ZONE III	ZONE IV	TOTAL
Buildings					

Schools	7660.8	14366.1	1300.3	10709.7	34037.0
Teacherages	181.1	1463.2	245.2	2874.1	4763.6
Student Residences	697.1	2786.6	133.7	0.0	3617.4
Day Care Centres	429.7	259.5	57.4	62.1	808.8
Recreational	3332.6	3550.0	399.0	1461.4	8743.0
Utility	165.5	255.4	46.1	220.0	687.0
Industrial	868.5	1306.7	302.1	1439.1	3916.4
Administrative	2972.1	3041.9	591.0	1588.1	8193.2
Fire Halls	271.8	538.0	50.2	237.1	1097.2
Water Supply					

Systems					
watermains-heated	1060.1	1084.7	97.0	567.3	2809.1
-unheated	0.8	15.7	2.1	93.4	112.0
- storage reservoirs	54.1	80.1	8.3	39.7	182.2
- standpipes	1.3	46.3	3.0	35.5	86.1
Pumphouses					
- community well	426.1	1045.4	36.7	388.9	1897.1
- low level lift	126.5	223.9	20.0	176.4	546.8
- high lift	422.4	923.7	621.3	368.8	2336.2
Treatment Facilities					
- system (conventional)	411.8	503.8	62.8	263.8	1242.1
- unit (partial)	96.5	181.2	14.3	133.6	425.4
Wastewater					

Collection					
- gravity mains	319.1	254.0	24.7	206.3	804.1
Lift Stations	389.5	415.4	30.9	535.3	1371.1
Treatment and Disposal					
- RBC/trickling filter	132.0	173.8	37.5	333.0	676.2
- extended aeration	93.2	214.1	26.4	291.2	625.0
- sewage lagoon	0.0	0.0	0.0	0.0	0.0
- aerated lagoon	172.9	354.6	13.8	134.0	675.3
- septic/holding tank	11.7	34.5	0.6	22.8	69.6
- jet/pumping disposal	0.0	0.0	0.0	0.0	0.0
Solid Waste					

Landfill	431.4	648.1	73.6	601.6	1754.8
Refuse Site	50.3	150.4	36.6	85.4	322.6
Incineration	2.4	5.0	0.0	3.6	11.0

1986/87

GFR BY REMOTENESS CATEGORY

TABLE 6

(\$000's)

	ZONE I	ZONE II	ZONE III	ZONE IV	TOTAL
Electrical Power					

Distribution/Transmission	0.0	0.0	0.0	430.1	430.1
Street Lighting	0.0	0.0	0.0	219.3	219.3
Generators	0.0	0.0	0.0	5420.5	5420.5
Transportation(km)	8389.5	8607.3	958.3	2307.9	20263.0

Vehicles					

Mini-pumper	136.0	334.7	25.9	176.6	673.3
Triple-pumper	289.2	272.4	28.3	91.8	681.7
Refuse Collection Truck	783.4	453.3	151.2	334.0	1721.9
Refuse Coll'n Tr (Unmod)	254.9	446.8	41.8	649.4	1392.9
Liquid Waste Collection	489.4	443.3	33.9	55.0	1021.6
Liquid Waste Coll'n (Unmod)	17.8	0.0	0.0	49.7	67.4
Water Delivery	1009.0	1452.9	392.4	1242.5	4096.7
Water Delivery (Unmod)	19.1	37.1	0.0	122.1	178.4

	32169.7	45970.1	5866.4	33971.0	117977.2
=====					

1986/87

DEPARTMENTAL CAPITAL ASSETS BY REMOTENESS CATEGORY

TABLE 7

	ZONE I	ZONE II	ZONE III	ZONE IV	TOTAL
Buildings(sq. m)					

Schools	166025	212919	15500	109476	503920
Teacherages	11185	52772	6074	42627	112658
Student Residences	22574	39229	905	0	62708
Day Care Centres	9739	4045	720	682	15186
Recreational	153353	125896	10079	34200	323528
Utility	7673	8370	1386	5874	23303
Industrial	62162	55704	8371	30768	157005
Administrative	74554	54671	6869	18440	154534
Fire Halls	11173	14059	1006	3923	30161
Water Supply					

Systems					
- watermains-unheated(m)	564095	525456	41829	170967	1302347
-heated(m)	12221	37353	3795	20995	74364
- storage reservoirs(ea)	100	154	15	57	326
- standpipes(ea)	5	166	9	71	251
Pumphouses(ea)					
- community well	154	348	11	61	574
- low level lift	46	77	6	30	159
- high lift	55	118	4	56	233
Treatment Facilities(ea)					
- system (conventional)	15	19	2	6	42
- unit (partial)	31	58	4	26	119
Wastewater					

Collection(m)					
- gravity mains	303341	210978	18363	91478	624160
Lift Stations(ea)	78	82	5	47	212
Treatment and Disposal(ea)					
- RBC/trickling filter	8	10	2	11	31
- extended aeration	4	9	1	7	21
- sewage lagoon	42	84	3	23	152
- aerated lagoon	0	0	0	0	0
- septic/holding tank	47	123	2	50	222
- jet/pumping disposal					
Solid Waste(ea)					

Landfill	65	90	9	52	216
Refuse Site	31	86	7	37	161
Incineration	0	2	0	2	4

	ZONE I	ZONE II	ZONE III	ZONE IV	TOTAL
Electrical Power					

Distribution/Transmission(km)	0	0	0	157	157
Street Lighting(fixture)	0	0	0	95	95
Generators(ea)	0	0	0	46	46
Transportation					

- Roads(km)	3630	4043	309	644	8625
- Bridges(ea)	88	94	23	38	243
Vehicles(ea)					

Mini-pumper	24	58	4	20	106
Triple-pumper	50	44	4	9	107
Refuse Collection Truck	25	14	4	6	49
Refuse Coll'n Tr (Unmod)	14	24	2	20	60
Liquid Waste Collection	16	14	1	1	32
Liquid Waste Coll'n (Unmod)	1	1	0	1	3
Water Delivery	33	46	11	23	113
Water Delivery (Unmod)	1	2	0	4	7

Appendix A

OPERATION AND MAINTENANCE COST DEFINITIONS

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>BUILDINGS</u>			
Schools	Cleaning or Custodial	Salaries	- (1).
		Supplies (2):	- cleaning; and - washroom, paper products.
		Equipment & tools (2)	- purchase, rental and repair.
		Contracted services.	
	Ancillary Costs	Water supply	- small building type or as part of municipal supply.
		Sewage disposal	- same as water supply.
		Solid waste disposal	- site incineration or site only collection.
		Electricity.	
		Heating fuels (2).	
		Snow removal	- by salaried personnel or contractor.
		Fire Protection:	- contracted alarm system, inspection and repair only; - extinguisher, recharge and repair; - contracted, off-reserve fire dept. services; - telephone lines, related to alarm; and - on-reserve services.
	Minor Repair or Maintenance	Salaries (1).	
		Preventive Maintenance Inspections.	
		Supplies (2).	
		Material (2).	
		Equipment & Tools (2)	- purchase, rental and repair of same.
		Contracted repair and maintenance services.	
		Grounds maintenance and repairs	- grass cutting, grounds equipment repair at average of \$2,000 per hectare of maintained site area for maximum of \$7,500 per school site.

- Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
--------------------------	-----------------	---------------------	-------------------

BUILDINGS

Schools (Cont'd)	Emergency Repairs/ Major Maintenance (\$5,000 maximum)	Emergency Repairs - maximum \$5,000 per site. Routine: - window repairs; - painting; and - resurface gym floor.	
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Activity costs specifically excluded from unit costs:

- alterations, renovations, additions;
- appliance purchase, repair, replacement;
- audio-visual equipment rental, repair or purchase;
- capital projects;
- emergency repairs and major maintenance exceeding \$5,000;
- energy retrofit, major projects;
- fire damage, repair or replacement costs;
- furniture purchase, repair or replacement;
- insurance premiums;
- security guards;
- portable building moving costs;
- sports equipment, purchase, rental, repair or replacement;
- taxes, local improvement;
- taxes, property; and
- telephone or communication costs.

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL</u> <u>ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>BUILDINGS</u>			
Teacherages	Ancillary Costs	Electricity.	
		Fire protection:	<ul style="list-style-type: none"> - contracted alarm system, inspection and repair; - contracted off-reserve fire dept. services; - extinguisher recharge or repair; - on-reserve services; and - telephone lines related to alarm.
		Heating fuel (2).	
		Solid waste disposal	- site incineration or site only collection.
		Sewage disposal	- small building type or as part of a municipal services.
		Water supply	- small building type or as part of a municipal services.

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>BUILDINGS</u>			
Teacherages (Cont'd)	Minor Repair or Maintenance	Salaries (1). Preventive maintenance inspections. Supplies (2). Materials (2). Equipment and Tools - purchase, rental and repair. Contracted repair and maintenance services. Furniture and appliance repair or maintenance. Grounds maintenance and repairs.	Purchase excluded. Max. \$1,000 per site.
	Emergency Repairs/ Major Maintenance	Emergency repairs. Routine - window repair, - painting, and - structural repair.	Max. \$1,000 per site.
Activity costs specifically excluded from unit costs:			
<ul style="list-style-type: none"> - alterations, renovations and additions; - appliance purchase; - capital projects; - emergency repairs and major maintenance exceeding \$1,000 per site; - insurance premiums; - major energy retrofit costs; - portable building moving costs; - taxes, local improvement; - taxes, property; and - telephone or communication costs. 			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
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BUILDINGS

Student Residences	Activity costs - same as for Schools.		
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Activity costs specifically excluded from unit costs:

- alterations, renovations or additions;
- appliance purchase, repair or replacement;
- audio-visual equipment, repair or purchase;
- food services equipment purchase, repair or replacement;
- food for residents;
- furniture purchase, repair or replacement;
- insurance premiums;
- major energy retrofit projects;
- security guards;
- sports equipment purchases, rental, repair;
- taxes, local improvement; and
- taxes, property.

Other Institutions	Activity costs - same as for Schools.		
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Activity costs specifically excluded from unit costs - same as for Student Residences.

Recreational Facilities	Activity costs - same as for Schools.		
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Activity costs specifically excluded from unit costs, - same as for Student Residence.

Day Care Centres	Activity costs - same as for Schools.		
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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>BUILDINGS</u>			
Utility	Minor repairs or maintenance to buildings only.		Energy costs for building to be included with cost of utility.
Industrial Plants	Activity costs - same as for Teacherages, except that minor repairs and maintenance of furniture and appliances are excluded. Activity costs specifically excluded from unit costs, - same as for Teacherages.		
Administrative Buildings	Activity costs - same as for Schools. Activity costs specifically excluded from unit costs, - same as for Schools.		
Fire Halls	Ancillary costs - same as for Schools. Minor repairs or maintenance.		

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>TRANSPORTATION</u>			<u>General Parameters</u>
Road Maintenance	Grading, maintaining crowns, repairing rough surfaces and removing loose material.	Salaries (1) including part time operators, preventive maintenance inspectors and maintenance supervisors.	
	Repairing and filling potholes, ruts, areas which have settled or eroded, soft and frost- heave areas and other damage.	Supplies, material (2) to carry out maintenance activities. O&M costs for road maintenance vehicles and equipment including fuel. Miscellaneous licences and insurance for machinery and equipment.	Suitable road material within 3 km from point of use.
	Snow clearing and sanding of surfaces.	Contracted services.	
	Inspection, repair, replacement and unblocking of culverts.		Operating maintenance equipment available locally
	Cleaning and main- taining ditches, rip-rap and catch basins.		Ditching (or ditch reshaping) not included.
	Inspecting, cleaning and repairing road signs.		
	Repairing and patching paved surfaces.		

- Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL</u> <u>ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>AVERAGE WORK PARAMETERS</u>	
			Inventory/Work Unit (see note 3)	Frequency
<u>TRANSPORTATION</u>		<u>Maintenance Activities</u>		
Road Maintenance (cont'd)	Repairing guiderails, delineators and snow fences.	Grading	kmG	9
		Catch Basin Cleaning	1 catch basin/kmP	0.5
	Waste and litter pickup.	Gravel Patching	6 m ³ gravel/kmG	1
		Dust Control CaCl ₂	0.5 t/kmG	2
		Gravelling	60 m ³ gravel/kmG	1
		Culvert repair/replace	0.07 culv./kmT	1
		Culvert Insp./Clean	1 culv./kmT	2
		Litter Pickup	kmT	2
		Vegetation Control	kmT	1
		Mowing	2 sw-km/kmT	2
		Ditch Cleaning	2 ditch-km/kmT	0.33
		Sign Main./Repair	2 signs/kmT	1
	Supplying, loading, transporting and spreading of material for maintenance of the surface course. (surface excluded)	Guiderail Main./Repair	3 m guiderail/kmT	1
		Asphalt Patching	3 t mix./kmP	1
		Crack Sealing	1.5 p.h./kmP	1
		Spray Patching	0.6 (100 L asphalt)/kmP	1
	Bridge deck inspection, cleaning and minor repairs. (painting excluded)	Shoulder Grading	kmP	3
		Bridge Inspection	bridge	0.5
		Bridge Cleaning	250 m ² /bridge	1
		Gen.Bridge Maint./Repair	250 m ² /bridge	1
		Snow Plowing	kmT	15
		Snow Removal	kmT	5
		Sanding & Salting	kmT	15

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).

2. These costs are those delivered to the reserve.

3. Legend:

kmG - gravel road kilometre

kmP - paved road kilometre

kmT - total road kilometres

sw-km - swath kilometre

p.h. - person hours

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>TRANSPORTATION</u>			
Vehicles:	Operating and	Salaries (excluding	Road maintenance
- Dedicated,	maintaining the	pumpers, all sizes)	vehicles
single	vehicles.	supplies, material	excluded.
purpose.		including fuel and	Salary allowance
- Mini pumper		contracted services.	based on 1000
and associated		hour operation/	
equipment.			year. Excludes
- Triple			vehicle regis-
combination			tration and
pumper and			insurance.
associated			
equipment.			
- Refuse			
collection			
trucks.			
- Liquid waste			
collection			
truck.			
- Water			
delivery			
truck.			
- Specific			
unmodified			
trucks:			
solid waste			
liquid waste			
water delivery			

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL SERVICES</u>			
Electric Power	Minor repair, preventive maintenance, routine inspections.	Salaries (1). Supplies, material (2). Equipment, tools (2). Contracted repair and maintenance services. Minor repairs as a result of vandalism, fuse replacement, guy wire repairs, etc. Tree trimming, right-of-way brush cutting.	Approximate 60 m pole spacing. Winters do not exceed 6 months Standard artificial highway lighting located south of latitude 57 degrees north.
	Emergency repairs, major maintenance	Emergency: repair/replacement costs, for example, sleet, high winds, lightening, etc. Routine: frequency of occurrence normally greater than 1 year e.g. overload relay adjustments, transformer oil testing, phase/circuit balancing, etc.	
Activity costs excluded: - major refurbishing programs where distribution lines have exceeded their economical life; and - repairs subject to insurance claims.			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL SERVICES</u>			
Water Supply System (potable)			
Water Distribution System from source of supply to consumer, including network of mains, hydrants, standpipes and reservoirs (excludes service connections).	Normal Operations. Routine maintenance and minor repairs including: - general yearly inspection; - hydrant flushing, inspection and servicing; - valves, mains and hydrant minor repairs; and - reservoir cleaning and inspection.	Salaries (1). Supplies, materials (2), including operating chemicals, pump motive power. Equipment, tools (2), including their purchase, rental and repair. Contracted repair and maintenance services.	Reserve population less than 1,000. Average hydrant spacing 140 m. Valve spacing 225 m. Host buildings excluded.
Heated water distribution system excluding heated service connections.	Normal operations and inspection of heat trace.	Energy generated by grid system.	Winter operation for 4 months (8 h/day).

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL</u> <u>ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL</u> <u>SERVICES</u>			
Water Supply System (potable)			
Pumphouses include the following:	Normal Operations.	Salaries (1).	Reserve population less than 1,000.
- Community well supply, including groundwater wells constructed or used to benefit the community at large.	Inspection and servicing well(s) and pumphouses. Routine maintenance chlorination equipment. General cleaning and painting. Annual inspections.	Supplies, materials (2), including pump motive power. Equipment, tools (2), including their purchase, rental and repair. Contracted repair and maintenance services.	Most buildings excluded. Chlorination equipment included.
- Low level pumphouses: structure and equipment to pump water from surface supply to storage including intake line, raw water, well, pumps, piping, hypochlorinator, etc.	Minor repairs as required.		
- High lift pumphouse: structure and equipment designed to pressurize the main distribution system including pumps, piping valves, hydropneumatic tanks and chlorination equipment.			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL</u> <u>ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL</u> <u>SERVICES</u>			
Water Supply System (potable)			
Water Treatment Facilities include the following:	Normal operations. Minor repair or maintenance.	Salaries (1). Supplies, materials (2), including operating chemicals, pump motive power.	Reserve population less than 1,000. Chlorination equipment excluded.
- Treatment system: structures and equipment used for treating water supplies including piping, components and valves designed for:	Inspecting, painting, servicing, cleaning, flushing of pipes, valves and tanks. Testing.	Equipment, tools (2), including their purchase, rental and repair. Contracted repair and maintenance services.	Host building excluded. High lift pumps included in treatment "system".
- coagulation, flocculation, sedimentation, and filtration.			
- Treatment unit: equipment unit such as a pressure filter unit, softening unit, greensand filter unit or equivalent; designed for treating water supplies, and including piping, tank and valves.			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL SERVICES</u>			
<u>Wastewater System</u>			
Collection System: transports wastewater from individual buildings to community treatment plant or adjacent municipal connection. This includes the network of mains and access holes.	Normal operations - and minor repairs or maintenance including yearly inspections, access hole flushing, unplugging sewers, repairs to access holes, mains, etc.	Salaries (1). Supplies, materials (2) including pump motive power. Equipment, tools (2) including their purchase, rental and repair.	Reserve population less than 1,000. Average access hole spacing 120 m. This excludes lift stations and service connections.
Storm sewers and catch basins required for drainage associated with roads.			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL</u> <u>ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL</u> <u>SERVICES</u> Wastewater System			
<ul style="list-style-type: none"> • Lift Station: consists of the structure and equipment used to lift wastewater from a low point in a collection system to a higher elevation. Includes dry well, wet well, pumps, piping, valves, forcemains and other associated equipment. 	<ul style="list-style-type: none"> • Normal Operations. Station equipment. Preventive Maintenance. General maintenance and cleaning. Sludge removal. Yearly inspection. Minor repairs as required. 	<ul style="list-style-type: none"> • Salaries (1). Supplies, materials (2) including pump motive power. Equipment, tools (2) including their purchase, rental and repair. Contracted repair and maintenance services. 	<ul style="list-style-type: none"> • Reserve population less than 1,000. Host building excluded.

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)

<u>CAPITAL ASSET</u>	<u>ACTIVITY</u>	<u>COST ELEMENT</u>	<u>PARAMETERS</u>
<u>MUNICIPAL SERVICES</u>			
Wastewater System			
Sewage Treatment Plant: structures and equipment used for treating wastewater. Consists of all tanks, equipment and processes used in sewage treatment. Systems include:	Normal Operations. Testing. Preventive Maintenance. General Maintenance. Cleaning and painting. Sludge removal. Yearly inspection. Minor repairs as required.	Salaries (1). Supplies, materials (2) including process chemicals, and pump motive power. Equipment, tools (2) including their purchase, rental and repair. Contracted repair and maintenance services.	Reserve population less than 1,000. Host building excluded.
- Mechanical plants such as extended aeration, rotating biological contactor and trickling filter.			
- Conventional and aerated lagoons.			
- Community septic tanks including holding tanks and septic tanks with pumped or jet disposal.			

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
 2. These costs are those delivered to the reserve.

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Appendix A (cont'd)

O&M COST DEFINITIONS (Cont'd)CAPITAL
ASSETACTIVITYCOST ELEMENTPARAMETERSMUNICIPAL
SERVICES

Solid Waste Disposal

Land Fill Site: an area assigned to receive solid waste. Note: this is not an open dump.

Normal operations, Salaries (1) including spreading, Supplies, material (2). compaction and covering waste with soil. These activities include annual clearing, trenching, etc.

Reserve population less than 1,000.

Refuse Site: an area used for the disposal of solid waste (garbage dump/pit).

Occasional spreading and covering of waste.

Excludes incinerators servicing individual facilities, such as schools.

Incinerator: structure used for the incineration of community solid waste. Note: Do not use a 45 gallon drum.

For vehicles used in operations of above see TRANSPORTATION, General Vehicles.

Note: 1. Salaries include full, part-time and/or casual employees (fringe benefits included).
2. These costs are those delivered to the reserve.

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REMOTENESS INDICES DEFINITION

The following are definitions to be used in establishing the appropriate Remoteness Index in determining O&M costs. The Zone classification for each reserve or settlement is contained in, Classification and Housing Economic Classification of Indian Bands by Zone.

- | | |
|--------|---|
| Zone 1 | A zone where the band is located within 50 km of the nearest city centre by year-round road access. Material prices are competitive. Delivery time and charges are either non-existent or nominal. Skilled labour is plentiful and productive. |
| Zone 2 | A zone where the band is located between 50 km and 350 km from the nearest city centre by year-round road access. Material prices are not as competitive (only one supplier). Transportation time and costs are significant. Only semi-skilled or unskilled labour is available. Skilled labour must be housed or compensated for travel. |
| Zone 3 | A zone where the band is located over 350 km from the nearest city centre by year-round road access. Material prices are excessive. Skilled and semi-skilled labour must be imported and housed on-site. |
| Zone 4 | A zone where the band has no year-round road access to the nearest city centre and as a result has a higher cost of transportation. |

It should be noted that a given site does not have to meet every criterion in order to be included in a given category.

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