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Examination of Potential Funding Mechanisms for Municipal Wastewater Effluent (MWWWE) Projects in Canada

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Preface

The Economic Implications Sub Committee would like to acknowledge the hard work and dedication of Gabrielle Moser (Infrastructure Canada) and Deneen Spracklin (NL Department of Environment and Conservation) on the completion of this Report. The members of the Sub Committee also contributed significant time and effort towards the review and research of this Report.

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1.0 Introduction

Municipal wastewater effluent is one of the most significant sources of pollution discharged into surface waters in Canada. In response to this situation, the Canadian Council of Ministers of the Environment (CCME) agreed to develop a Canada-wide strategy for the management of municipal wastewater effluent (MWW). The CCME anticipate the creation of a harmonized, one-window approach to deal with MWW that will be effective and efficient for all of Canada. The implementation of such a program will require the installation or upgrade of many wastewater treatment facilities and related infrastructure. As a result, the Economic Implications (EI) Sub Committee was formed to examine the cost implications of implementing a Canada-wide strategy for the management of MWW. The implementation costs will be dependent on the treatment requirements/treatment equivalences and risk management model accepted by the CCME.

Investments in municipal wastewater infrastructure have been greatly decreased since the 1950's and 1960's when a large percentage of wastewater facilities in Canada were constructed. At present time, some of these facilities are reaching the end of their life-cycle or are in dire need of upgrade and maintenance. Therefore, funding will be a major factor in the success of a national strategy for MWW. The EI Sub Committee is committed to identifying sustainable funding mechanism(s) that can be accessed by municipalities so they can meet the requirements of the strategy. In May 2005, the sub committee initiated an internal project to examine existing and alternative funding mechanisms that have been used both within and outside of Canada. This report outlines the findings of this project.

2.0 Brief Analysis of Options

The EI Sub Committee compiled a list of funding mechanisms that are available either within or outside of Canada. Each mechanism was summarized in a spreadsheet format under the following headings:

- General Information;
- Advantages;
- Disadvantages or Considerations;
- Sustainable or One Time;
- Repayment Required (Y/N and Why);
- Cost to the Public;
- Leveraging Potential;
- Example of Location Where Used; and
- Applicable to MWW (Y/N and How).

The following sub-sections include a brief discussion of the funding mechanisms that were identified and considered for this report (Refer to **Appendix A** for more detail).

2.1 *Alternative*

The types of *Alternative* funding models considered during this process included Sponsorships, Innovative Transportation Revenues and Incentives, Government Service Partnerships, Strategic Budget Allocations, and Utility Models.

Sponsorships use money from a private contributor, in exchange for some form of public recognition. This type of funding has been used previously in Canada, but it is not a common form of funding and would not be an appropriate mechanism for Municipal Wastewater (MWW) projects on a broad basis. In Okotoks, Alberta, sponsorships are being used for the development of open spaces and recreational areas, and in Winnipeg, Manitoba, sponsorships are being investigated as a means by which to recover operation and maintenance costs in municipal parks.

Another type of funding that has been used in Canada is Innovative Transportation Revenues and Incentives. For this type of funding, a portion of provincial fuel taxes or revenues generated by other means such as tolls, passenger facility charges or other charges related to transportation are redistributed to municipalities for the funding of construction or operation and maintenance of road infrastructure. One of the major drawbacks associated with this funding scheme is that small municipalities may not receive enough money to fund to larger scale projects such as MWW facilities. However, this would be a sustainable source of funds as long as the revenue flow was maintained. Currently in Canada, the New Deal for Cities and Communities will provide money from the federal government to the provinces and territories, which will then be distributed to municipalities. These funds will be used for public transit, water and wastewater management, solid waste and community energy systems. As well, Calgary, Edmonton and Grande Prairie, Alberta have a similar program for redistributing the funds collected from a provincial fuel tax.

Government Service Partnerships use various combinations of government partnerships such as municipal-municipal, provincial-municipal, or federal-municipal to fund infrastructure projects. These arrangements could be ideal for small, neighboring municipalities, because of the administrative cost savings combined with a higher level of service. Municipalities could save money by sharing services such as human resources without sharing a MWW treatment facility. However, it should be recognized that there might be considerable start-up costs to organizing such a partnership. Government service partnerships have been previously implemented in Canada. One example is Annapolis County, Nova Scotia that uses a regionalized service to manage solid waste and transit services.

Strategic Budget Allocations are when a portion of a tax bill or a rate bill is placed in a special fund. This money is then invested, and the interest earned is re-invested. Once established, the fund can be used for future projects. One of the main advantages to this type of funding mechanism is that it would be applicable to municipalities of any size. However, it will take several years for a municipality to accumulate sufficient funds for a major MWW project. Strategic budget allocations have been used previously in Canada (i.e. Surrey, BC, Yellowknife, NWT), and would be suitable for funding of MWW systems.

Utility Models are also referred to as “full-cost recovery models” and involve a charge and direct billing for system use and services. The bill normally has a fixed charge combined with a charge

dependent upon consumption, as this type of model most often applies to water utilities. Since a utility model operates on a cost-recovery basis, the fee for the services must be sufficient to cover all costs including administration and operating costs. This type of funding can be viewed as fair since it is the users of the infrastructure that pay, and usually on a basis proportional to their use. Organizing such a funding system can be complicated and may have some substantial up-front costs. Utility models have been previously implemented in Canada (i.e. Kelowna, British Columbia has a sewer utility charge for residential users that combines a flat rate with a parcel tax, and similar types of charges exist in Saskatoon, Saskatchewan, and Edmonton, Alberta) and would be very applicable to a MWW infrastructure situation.

2.2 *Bank*

The funding models identified under the heading of *Bank*, and examined as part of this project included Bonds, Loans, Revolving Loan Funds/State Infrastructure Banks, Trust Funds, and Securitization Funds.

Bonds can be sold at all levels of government for infrastructure projects, however municipal Bonds are uncommon. The borrower of a Bond repays the capital value of the Bond, plus interest, by a specified date. A tax-exempt Bond allows the borrower to obtain funds at a lower interest rate than normal. An advantage to using Bonds to fund MWW projects is that the funds can be obtained immediately, and as a result the initial financial burden on the public will be greatly reduced. The repayment of the Bond funds will then be shared over the future generations. However, Bonds will not be an efficient form of funding if the revenue stream contributing to the repayment is not based on the full cost of the infrastructure. Bonds are not available to all municipalities, especially those that are not rated or do not have a good Bond rating. Another disadvantage to Bonds is that they can result in high long-term costs to the public. Bonds are a very popular funding tool in the United States. The Ontario based Municipal Economic Infrastructure Financing Authority began issuing tax-exempt Bonds in May 2003. This type of funding mechanism is best suited for large, wealthy municipalities, and therefore is not an applicable model for most communities in Canada.

Loans, under the scope of this project, include loan agreements, loan guarantees, and capital access programs. Under this type of funding the lender is part of the private sector and the borrower could be a province or a municipality. Under a capital access program, both the borrower and lender pay into a loss reserve fund, and the payment is matched by the federal government. An advantage of using a loan to fund a municipal wastewater infrastructure project is that the funds can be obtained immediately, and therefore the initial financial pressure on the public is decreased. However, loans can have very high interest rates, and this may have a significant financial burden on municipalities. Loans could be a possible funding alternative for MWW infrastructure projects, but their applicability may not extend to small municipalities. In addition, there may be some barriers that would restrict the availability of loans within Canada.

A Revolving Loan Fund includes an initial grant from either the federal or provincial government, along with a percent match contributed by the municipal government. The municipality is responsible for the administration of the fund, and they can lend and re-lend the funds. The provincial government contributes a continuing grant on a yearly basis, which decreases over time. State infrastructure banks are state run banks in the United States that

operate like private banks with low-rate loans. This type of funding is sustainable and very flexible with respect to the conditions of repayment, refinancing, and type of project funded. Revolving Loan Funds have been used extensively in the United States, including the financing of the Drinking Water State Revolving Fund and the Clean Water Revolving Fund, and in Canada with the BC Municipal Finance Authority. In addition, the funds provided through the Green Municipal Fund in Canada, were very similar to this type of funding mechanism. Even though revolving loan funds may have potential for a wider application in both Canada and the United States, they may not be applicable to small municipalities with limited financial and administrative resources.

Monies held in trust funds are a percentage of tax revenues that are dedicated to a specific investment area. The largest advantage of accessing trust funds to finance infrastructure projects is that there are no long-term costs to be burdened by the public, and overall they are less expensive than Bonds. Trust funds are also viewed as being sustainable, and equitable if their source of revenue is from the users of the infrastructure (i.e. gas tax is directed towards highway infrastructure projects). The United States have used trust funds for the federal funding of highways and transit projects, and a similar system could be adapted to fund MWW projects. Trust funds have also been used within Canada (i.e. New Brunswick has the Environmental Trust Fund that supports environmental conservation projects).

Securitization funds use repackaged loans to sell securities which entitle the owner of the securities to repay a portion or the total amount of a loan. The loans are pooled and the cash flow from the loans is used to pay the interest and principal on the securities. An advantage of obtaining money through a securitization fund is that individual municipalities or regional districts can borrow money together and guarantee each other's debt. Even though securitization funds can provide long-term financing at low rates, small municipalities may not be able to handle the financial burden. This type of funding mechanism has been used in Canada (i.e. Toronto Atmospheric Fund) and the United States. However, securitization funds may not be applicable to the MWW sector since investors may not feel that their investments are diversified in a securitization fund which provides funds to only one type of project.

2.3 P3

P3 funding options that were considered under the scope of this project included Public-Private Partnerships, Build Operate and Own (BOO), Build Operate and Transfer (BOT), and Private Finance Initiatives (PFI).

P3s involve the private sector in the delivery of public services. The involvement can vary from minimal to extensive. There are many advantages that have been identified by involving the private sector in public services; creativity and the level of expertise and innovation will be increased, costs to governments can be lessened, the private sector can handle more debt than most municipalities, and the arrangement can involve a maintenance phase for which total life cycle costs will be considered. This type of mechanism may present some risks to the public, and will only be successful if there is political commitment, without interference. This type of funding has been used extensively in the United States, the United Kingdom, Australia, Europe, and is becoming more common in Canada (i.e. Partnerships BC, Sea to Sky Highway, Fraser River Crossing, and the Kelowna Floating Bridge). P3s would be appropriate for MWW

infrastructure projects since these projects require large capital investments and also offer revenue through user fees. P3 funding offers various arrangements such as the Build Operate and Own (BOO), the Build Operate and Transfer (BOT), and the Private Finance Initiatives (PFI). These arrangements are essentially the same, but with varying levels of private involvement.

2.4 *Public*

The *Public* funding mechanisms that were identified and considered during this project included Transfer Payments, Grants, Contributions, and Taxation.

Public funding is generally in the form of transfer payments from the federal provincial government levels to the provincial or municipal government levels. These transfers may be for specific projects or may be non-specific. It is an equitable form of funding since all municipalities would have access to such funding. The financial burden is negligible to the municipalities or provinces since the federal government does not require repayment of the funds. Unfortunately, those paying for the infrastructure projects may not necessarily be the ones using the services, because funds collected in one region may be directed to funding a project in another region.

Grants are another form of payment that is transferred from the federal or provincial government levels to the provincial or municipal government levels. Applying for a grant program can be difficult and may require significant administrative resources. In addition, grants are an unpredictable funding resource as a result of the changing priorities of the federal government. However, grants have been used extensively within Canada to fund many services.

Contributions are a non-repayable transfer of funds from the federal government to the provincial and municipal governments. The funds provided by the federal government are intended for a specific purpose and must meet the terms of a Contribution Agreement. This type of funding is quite common in Canada. There are four funding programs at Infrastructure Canada (CSIF, ICP, BIF and MRIF) that fit into this funding category.

Taxation is a common form of funding that is used by all three levels of government to generate revenues that may be used to fund infrastructure projects. Even though this type of funding is based on a stable tax base, the funds may be insufficient for MWW purposes, and would not be uniform across the country. However, taxation is generally a sustainable form of funding.

2.5 *User Based*

The user based funding options examined during this process included Special District Financing, Development Charges and Fees, and Special Levies.

Special District Financing is often used in combination with development charges to finance new infrastructure projects. Special Districts are useful when residents or landowners want new services, or want to upgrade their existing public utility services to a higher level of service. In such a case, residents can form a Special District. Special Districts localize within a municipality or a community the costs and benefits of public utilities, thereby allowing citizens within the District the services they want for a price they are willing to pay. This type of funding

is equitable since those most likely to benefit from such a project are those paying for the services. Special District Financing is very common in the United States, and would be suitable for funding MWW infrastructure projects.

Another funding mechanism that has been previously utilized in Canada is Development Charges and Fees. Under this type of funding a development charge or fee is implemented to pay for new infrastructure rather than increasing property taxes. An advantage to using this type of system is that new infrastructure will only be built if it is truly necessary, and therefore reduces the waste of public money. One disadvantage to be considered before implementing development charges or fees is that administrative costs associated with operating this type of system can be substantial. Some examples where development charges have been applied in Canada include the following: Calgary, Alberta uses development cost charges for new capital infrastructure within zoned areas; Halifax, Nova Scotia has implemented development charges for developers to share in the expenditures required to expand water systems, wastewater facilities, storm sewer systems and additional roads. Development charges or fees would be very applicable for the construction of MWW infrastructure.

Special Levies are sometimes used to fund infrastructure projects when it is difficult to fund through a user pay system, and when it would be beneficial to have the funds separated from the general tax. This method normally involves the creation of a special fund that is administered by the municipality. Some disadvantages identified with this system include the following: the administration costs can be substantial; it may be difficult to convince the public of the benefits related to implementing these levies; and it would be difficult for smaller municipalities to generate enough revenue to fund infrastructure projects. This type of funding mechanism has been previously implemented in the United States (i.e. Portland transit system), Australia (i.e. watershed protection), and Canada (i.e. in Alberta for infrastructure replacement, Winnipeg water and sewer, Prince Edward Island fixed link bridge, and Ontario Highway 407).

2.6 Applicability of Funding Mechanisms According to Municipality Size

Table 1 provides a summary of each funding mechanism discussed, and its applicability with respect to municipality size.

Table 1 Funding Mechanisms and their Applicability

Funding Mechanism	Small	Medium	Large	Very Large
	250 m ³ /d < 500 pop.	250–5000 m ³ /d 500–10,000 pop.	5000-50,000 m ³ /d 10,000-100,000 pop.	>50,000 m ³ /d >100,000 pop.
Sponsorships		✓	✓	✓
Innovative Transportation Revenues & Incentives			✓	✓
Government Service Partnerships	✓	✓	✓	✓
Strategic Budget Allocations	✓	✓	✓	✓
Utility Models			✓	✓
Bonds		✓	✓	✓
Loans		✓	✓	✓
Revolving Loan Fund/Provincial or State Infrastructure Bank		✓	✓	✓
Trust Funds			✓	✓
Securitization Funds		✓	✓	✓
Public Private Partnerships		✓	✓	✓
Transfer Payments	✓	✓	✓	✓
Grants	✓	✓	✓	✓
Contributions	✓	✓	✓	✓
Taxation	✓	✓	✓	✓
Special District Financing		✓	✓	✓
Development Charges & Fees		✓	✓	✓
Special Levies			✓	✓

3.0 Small Communities

Small communities in Canada face many challenges with regards to the handling of municipal wastewater. Communities with little or no tax base, and higher per capita costs, are unable to afford to finance the construction of MWW treatment facilities, nor to operate them on a sustainable basis. In addition to the funding challenges, it is difficult for small communities to find trained and knowledgeable operators. It is important for these small communities that innovative forms of funding are identified. As well, these communities need to reassess the way in which they operate their systems.

To alleviate some of the funding challenges inflicting small communities, the following operational changes can be implemented:

- form a partnership with larger regional municipalities, if location permits;
- combine operations with other small communities and form a regional service, if location permits; and
- share resources such as workforce with other small communities.

In addition to saving money for small communities, the above changes would also help in providing trained and knowledgeable operators for the treatment facilities.

Small communities, with little or no tax base, are unable to build and operate MWW treatment facilities on a sustainable basis. A user pay system would be unreasonable for small communities and therefore innovative forms of funding should be considered in order to efficiently operate a MWW treatment system. In Canada, specific funding programs exist for which small communities may be eligible. The following are funding programs currently available, and funding mechanisms that may be applicable in small communities:

- Government of Canada funding programs such as:
 - The New Deal for Cities and Communities;
 - The Municipal Rural Infrastructure Fund; and
 - The Green Municipal Fund.
- Government Service Partnerships
- Low interest or no interest loans, if available
- Public Funding (i.e. Transfer Payments, Grants, and Contributions).

4.0 Future Direction

The success of a Canada-wide strategy for MWWE will be dependent upon the availability of suitable funding to municipalities for the implementation of the provisions for the MWWE Strategy. In the past, senior government levels may have provided funds for infrastructure projects without considering the full extent of the life-cycle cost of these projects and the sustainability of the funding. In some cases, this has resulted in over-designed systems that municipalities are unable to properly operate and maintain due to the high and unforeseen cost of repairing and replacing aged wastewater infrastructure. To avoid a repeat of such circumstances, the future direction of infrastructure funding must be improved. Life-cycle costs extending from project development and construction to maintenance and total upgrade and rehabilitation of these systems should be considered. Further, funding programs could be implemented that are maintained for the entire life-cycle of the system. In addition, the funding approach must be accountable, transparent, and equitable. The various levels of government need to decide if these basic requirements could be met by the present day methods of funding, or whether Canada should move towards full-cost recovery for MWW infrastructure projects.

Due to previous oversights, it has been realized that life-cycle costs, comprising of capital costs, operating and maintenance costs, environmental costs, and emergency services should be taken into consideration when evaluating the cost of a MWW infrastructure project. It should be noted that such costs, as listed previously, may increase as a result of upgrading MWW treatment systems.

Full cost accounting is a process that should be undertaken by all municipalities. Identifying and examining all aspects of a MWW treatment system and their respective costs will be beneficial not only in operating the system, but also in determining the appropriate rate structure for the services. Full cost accounting will allow municipalities to examine their situation in a realistic

manner, and should be based on life-cycle costs of the project or infrastructure. For full cost accounting to be performed successfully, a complete inventory of assets must be compiled.

Full cost recovery is the most desirable option of funding MWW infrastructure and related services, and the most effective method of ensuring full cost recovery is through a user-pay method of funding. However, this may not be realistic to implement in small municipalities where the utility, due to fiscal capacity constraints, may not be able to operate and maintain good working order unless users are charged a very high price.

It may be necessary for more than one type of funding arrangement to be recommended to satisfy the needs of all municipalities since any future funding scheme must take the following factors into consideration; life-cycle costs, accountability, and fiscal capacity of the utility. Various types of funding mechanisms have been examined through this project that could be applicable to a MWW situation, and the following section summarizes the recommendations resulting from this project.

5.0 Recommendations

The following is a summary of recommendations provided by the Economic Implications Sub Committee following the review and examination of various funding mechanisms available to municipalities:

Strategic

1. Each utility should establish a contingency fund, where feasible, so that they will be prepared to deal with emergency or unpredictable situations with the MWW infrastructure that will require funds.
2. Full cost accounting should be investigated and considered by all municipalities prior to the implementation of the MWW Strategy and any associated upgrading activities. Funding of the project should only be initiated once the municipality has completed full cost accounting. Once the full cost accounting has been completed, municipalities should assess the feasibility of full cost recovery.
3. Wastewater services should have independent responsibility for the metering, billing, and collecting. In addition, this service should maintain an account that is separate from other services provided by the municipality.
4. All financial information related to municipal wastewater services should be fully transparent and open to the public, especially if the municipality is using a user pay approach for funding.
5. Volumetric rates charged to the users of a municipal wastewater service should reflect the quality of the wastewater to be treated and the required treatment capacity (i.e. commercial, residential, recreational, and institutional, etc.).

6. If an increase or expansion in a municipal wastewater system is required to benefit a specific customer or group of customers, a Development Charge should be paid by those individuals or groups.

Capital

1. If a user pay system is chosen as the appropriate funding mechanism, the municipality must effectively communicate the benefits of paying for a service to the public.
2. Funding mechanisms that use private or non-government funds should be considered to supplement funds provided through more traditional methods.
3. Federal and/or provincial funding should only be used for municipal wastewater projects that cannot be sustainable on a life cycle basis without initial capital funding from the senior government level.
4. Provincial/Territorial governments should be encouraged to investigate and, where possible, implement programs providing low interest loans to municipalities for the purpose of increasing or expanding their existing MWW infrastructure.
5. A Revolving Fund mechanism for funding MWW infrastructure similar to the BC Municipal Finance Authority or United States' Drinking Water State Revolving Fund could be implemented. Although this type of funding mechanism still requires payback, it could be useful for jurisdictions that qualify.
6. Where appropriate, municipalities may consider implementing a special levy to pay for MWW infrastructure.
7. P3 arrangements should continue to be investigated as a feasible means for financing MWW infrastructure.

Operation and Maintenance

1. Smaller municipalities, where feasible, should consider forming a regionalized system in order to allow for the sustainable operation of a municipal wastewater system.
2. For sustainability of MWW infrastructure, each facility should have trained and qualified operators.
3. As a result of upgrading existing MWW treatment systems, municipalities will need to consider the increased costs of operation and maintenance activities.

Preferred funding approaches are described below.

1. Small, remote communities:
 - a) Innovative Transportation Revenues may be used to fund smaller scale MWW projects.

- b) Low interest or no interest loans may encourage some of these municipalities to upgrade or increase existing MWW infrastructure.
- 2. Small, aggregated communities in addition to the above funding approaches may also want to consider regionalization of services.
- 3. Mid-sized to larger communities. In addition to the above funding mechanisms, larger sized communities should rely on the following types of funding:
 - a) Strategic budget allocations as these have been found to be useful in maintaining an adequate level of financial resources for infrastructure projects.
 - b) Utility models that may allow for full cost recovery, due to their charge for direct system use and services.
 - c) Revolving Loan Funds have been useful in funding water projects in the United States, and may be ideal for certain communities.
 - d) Trust Funds dedicated specifically to MWW projects may be a reliable source of funding.
 - e) User Based Financing Mechanisms, including Special District Financing, Development Charges and Fees, and Special Levies would allow for reasonable cost recovery in communities with large enough populations to allocate the costs, such that the charge is not too high.

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APPENDIX A Examination of Potential Funding Mechanisms for Municipal Wastewater Effluent (MWWE) Projects in Canada

FUNDING MECHANISM	GENERAL INFORMATION	ADVANTAGES	DISADVANTAGES OR CONSIDERATIONS	SUSTAINABLE OR ONE TIME?	REPAYMENT REQUIRED? Y/N Why?	COST TO THE PUBLIC?	LEVERAGING POTENTIAL	EXAMPLE OF LOCATION WHERE USED	APPLICABLE TO MWWE? Y/N How?	REFERENCES
ALTERNATIVE										
SPONSORSHIPS	Private contributor or group, in exchange for significant donations or strategic funding arrangements to a municipality, obtain some form of public recognition through advertising, signage, or other.	Private contributor or group benefits from recognition through advertising, signage or a monument and the municipality benefits from a significant donation towards the funding of a project.	Not a very common type of funding mechanism.	One Time.	No repayment required, although the contributor must be acknowledged.	For the sponsored component of the project that is funded, there is no cost to the public.	N/A, although a private contributor or group may have a vested interest in having a project proceed or may have certain criteria that need to be met in the development of the project.	This type of funding has been used in Okotoks, Alberta in the development of open spaces and recreational areas, but does not seem to be very prevalent among Canadian municipalities. Winnipeg is pursuing corporate sponsorships for municipal parks to help cover O&M costs.	Not likely applicable to MWWE. This funding mechanism is not commonly used and should not be considered a dependable funding mechanism for MWWE projects in Canada. It could be difficult to provide public recognition to a corporation donating to a MWWE treatment project. MWWE is not visible to a community in the same way a park or green space is.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure.
INNOVATIVE TRANSPORTATION REVENUES AND INCENTIVES	Generally involves an agreement in which a portion of provincial or federal fuel or gas taxes collected at gas pumps is redistributed to municipalities towards funding the construction or O&M associated with road infrastructure or other infrastructure projects. Other examples include road tolls, advertising fees along major routes or bus shelters and local road improvement with community funding partnerships. Refer also to "Special Levies" Funding Mechanism below.	An example of an advantage, is that those using fuel or gas are also using the road infrastructure, and a portion of these fuel or gas taxes may be redistributed to communities and used towards funding programs directly related to transportation or other types of infrastructure.	There may be difficulties in determining how to allocate the funds to the municipalities. Municipalities with smaller populations may not receive adequate funds to fund large projects. Municipalities may have to follow the terms and conditions of an agreement with a provincial or federal level of government, which could limit the municipality's control of how the funds are used.	Generally sustainable as long as the source of revenue or the incentive is maintained.	No.	The public pays the tax, the toll or contributes in other indirect ways to the project.	For tolls no leveraging potential. For a redistribution of provincial or federal fuel taxes collected at gas pumps benefits can be leveraged through the bilateral agreements negotiated at the provincial/territorial or federal level.	Through the New Deal for Cities and Communities the federal government will flow the gas tax funds through the provinces and territories, which will in turn be allocated according to the municipalities as per federal-provincial and federal-territorial bilateral agreements. The funds will be directed towards projects involving public transit, water and wastewater management, solid waste and community energy systems. Calgary, Edmonton and Grande Prairie in Alberta also have a similar program that redistributes provincial fuel taxes.	Yes. Gas tax or fuel tax funds may be redistributed to water and wastewater projects.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure.
GOVERNMENT SERVICE PARTNERSHIPS	Alternative form of service delivery which can take place in the form of inter-municipal, provincial-municipal, or federal-municipal partnerships. Also referred to as "regionalization" of services.	The arrangements can be fairly creative and could be ideal for small, rural, neighbouring communities. The partnership could result in various advantages such as savings in administrative cost and a higher level of service.	There may be start-up costs associated with this partnership.	Sustainable given that the partnership for the delivery of these services is ongoing.	N/A	N/A	No.	Regionalized services have been used in Canada, including Annapolis County in Nova Scotia where a regionalized service agreement with other towns is used to manage solid waste and transit.	Yes, one example is that municipal partnerships could be used to lower the cost of service delivery for municipalities that are located in close proximity to one another.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure.
STRATEGIC BUDGET ALLOCATIONS (Funds)	This method involves strategically setting aside certain monies collected from a portion of a tax bill or a portion of a rate bill into a special fund. The fund is then invested, and interest earned is re-invested, with the goal of having a special fund for certain types of capital for future needs.	Can be applied to a diverse range of services. Can be applied in all types of municipalities regardless of size or growth patterns.	May encounter scepticism from the public regarding the need for such allocations.	Sustainable.	No.	The source of the monies for these funds may be collected from a portion of the tax bill or a portion of a rate bill.	No.	Reserve funds have been used in Surrey, BC., and Yellowknife, NWT. In Surrey a number of reserve funds have been used. In Yellowknife stabilization funds are used to maintain an adequate level of financial resources for infrastructure and to protect against reduced service levels or higher taxes.	Yes. A fund can be set up and directed towards the funding of wastewater projects.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure.

FUNDING MECHANISM	GENERAL INFORMATION	ADVANTAGES	DISADVANTAGES OR CONSIDERATIONS	SUSTAINABLE OR ONE TIME?	REPAYMENT REQUIRED? Y/N Why?	COST TO THE PUBLIC?	LEVERAGING POTENTIAL	EXAMPLE OF LOCATION WHERE USED	APPLICABLE TO MWWE? Y/N How?	REFERENCES
UTILITY MODELS	Utility models are also known as "full-cost recovery models" and involve a charge and direct billing for system use and services. Typically, utility charges are charged for potable water, however since wastewater is a by-product of the use of water, the charge for wastewater can typically be collected with the water bill. This type of financing provides for full-cost recovery.	This type of bill typically has a fixed charge component and a component dependent on the amount of water consumption (and therefore wastewater produced), and is therefore somewhat dependent on the amount of water used. This type of billing covers various costs associated with system operation, maintenance, delivery, overhead and may also cover environmental protection and management programs for water and wastewater systems. The entire system may be managed on a cost-recover and self-financing basis.	Amount of wastewater discharged and entering the sewer system may not be equal to the amount of water used.	Sustainable.	N/A	In most municipalities, the wastewater charge appears as a percentage surcharge on the total water bill.	N/A	In Kelowna, BC, the sewer utility charge for residential customers is made up of a monthly flat user rate and a parcel tax. Similar types of utility charges also exist in Saskatoon, and Edmonton.	Yes, this type of funding mechanism is economically sustainable as it covers costs associated with operation and maintenance, future capital costs as well as other costs.	Dedicated Funding - A Best Practice by the National Guide to Sustainable Municipal Infrastructure.
BANK										
BONDS	In Canada, bonds can be sold for infrastructure at all three levels of government, although municipal bonds are less common. The borrower promises to repay the capital value of the bond along with interest at a specified date. With tax-exempt bonds, the borrower can borrow funds at lower interest rates than regular rates.	Bonds can be immediate. Up-front financial burden on the public is reduced, and the repayment of the bond can be shared over generations.	Some communities may not be able to issue bonds if they are not rated or do not have a good bond rating. Bonds can create high long-term costs for the public, and are not efficient unless the revenue stream supporting the bond financing is based on the full marginal cost of the infrastructure.	One-Time financing.	Yes, the borrower is required to repay.	N/A	No.	Bonds are commonly issued in both Canada and the United States. In the United States, bonds are more attractive as interest income is exempt from federal and/or state tax.	Yes, depending on the type of bond. High management and legal costs can make this option less attractive to municipalities. Poor financing option for MWWE for any but the largest, wealthiest municipalities.	<i>Beyond Infrastructure Canada Innovative Financing Options</i> , Prepared for Environment Canada by Gardner Pinfold Consulting Economists Limited, February 2001
LOANS	Loans include loan agreements, loan guarantees and capital access programs (CAPS). The lender is a private sector company and the borrower is a province or municipality. For CAPS, the borrower and the lender make a payment into a loss reserve fund, and the payment is matched by the federal government, thereby reducing the lender's risk.	Loans can be immediate. The up-front financial burden on the public is reduced. Viable option for communities which cannot afford private sector interest rates, or which private investors deem too risky or unprofitable to lend to.	In Canada, some barriers may restrict the use of loans. Some municipalities that are small, remote or rural may be unable to obtain a loan. Loans, because of their high interest costs, impose a significant financial burden on communities. Can be unstable, as political priorities and fiscal demands change.	One-Time financing.	The borrower pays back the loan with interest over time to the lender. A federal or provincial/territorial government may offer a loan with no interest.	N/A	No.	Very common in Canada and the United States.	Yes. Loans can be used to fund wastewater projects.	<i>Beyond Infrastructure Canada Innovative Financing Options</i> , Prepared for Environment Canada by Gardner Pinfold Consulting Economists Limited, February 2001
REVOLVING LOAN FUNDS/STATE INFRASTRUCTURE BANKS	A revolving loan fund is set up when a higher level, or central level government provides an initial grant, and lower jurisdictions provide a percent match and oversee the administration of the fund. The lower jurisdiction can then lend and re-lend funds. The central government provides a yearly grant that declines over time. The administration of the fund is paid using interest income.	Sustainable. The flexibility of the revolving loan fund can allow for the development of a wide range of assistance options (providing low-interest loans, extending repayment periods, refinancing, etc.)	Certain jurisdictions may not qualify. In the US, it has been shown that small communities with limited financial, technical, administrative and legal resources encounter difficulties qualifying for and repaying these loans.	This is a sustainable financing mechanism, that provides for one time-funding of infrastructure projects	Yes. As recipients pay back the loans to the revolving funds, the central level government can make new loans to other recipients.	N/A	Good leveraging potential if there are conditions administered with the funds.	In the United States these are referred to as "State Infrastructure Banks", and are a popular way to finance water infrastructure, including the "Drinking Water State Revolving Fund" and the "Clean Water Revolving Fund". May have potential for wider application in Canada than in the US.	Yes. A Revolving Fund for wastewater projects can be set up.	<i>Beyond Infrastructure Canada Innovative Financing Options</i> , Prepared for Environment Canada by Gardner Pinfold Consulting Economists Limited, February 2001.; USEPA website: The Drinking Water State Revolving Fund: Protecting the Public through Drinking Water Infrastructure Improvements: http://www.epa.gov/safewater/dwsrf/dwfact.pdf
TRUST FUNDS	A percentage of tax revenues is dedicated to a specific investment area, thereby providing revenues for trust funds. Equitable if the source of revenue draws from users of the type of infrastructure that they support. (e.g. gas tax used to fund a highway infrastructure project.)	Trust funds do not impose long-term costs on the public. Less expensive than bonds.	Speculation in the United States that these funds may not be sustainable because future levels of spending may exceed current levels of spending.	Sustainable.	No.	A trust fund is set up from tax revenues.	Yes, if the trust fund is targeted towards specific types of infrastructure projects.	In the United States Trust Funds are useful for federal funding of highways and transit projects. In Canada, an example of a Trust Fund is the New Brunswick Environmental Trust Fund that supports projects in environmental conservation projects in New Brunswick.	Yes. Tax revenues could be used to provide revenue to a wastewater trust fund.	<i>Infrastructure Financing: A Literature Review of Financing Mechanisms</i> , Research & Analysis of Infrastructure Canada.; Government of New Brunswick webpage: http://www.gnb.ca/0009/0373/0002/0001-e.asp
SECURITIZATION FUNDS	Securitization is the process of repackaging loans and selling certificates, or securities, which entitle the owner to some or all of the repayment on the loans. The loans are pooled and the cash flows from the loans in the pool pay off the interest and principal on the securities.	Allows individual municipalities and regional districts to borrow together as a group and to guarantee each other's debt. Likely to provide long-term financing at rates well below those typically available to individual municipalities.	The financial burden may be beyond the financial capacities of the very poorest communities. Investors may not feel that a securitization fund which provides loans for only one type of project (such as one involving MWWE) will actually diversify their portfolio.	One Time.	Yes.	N/A	No.	Securitization loans have been used in the United States and Canada. For example the Toronto Atmospheric Fund to finance local initiatives related to global warming and to improve air quality in Toronto.	Yes. May be applicable to certain communities with good financial means.	<i>Beyond Infrastructure Canada Innovative Financing Options</i> , Prepared for Environment Canada by Gardner Pinfold Consulting Economists Limited, February 2001.; City of Toronto Website: Toronto Atmospheric Fund: http://www.city.toronto.on.ca/taf/ .

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P3										
PUBLIC-PRIVATE PARTNERSHIPS (P3S)	This financing arrangement increases the involvement of the private sector in public service delivery, and can range from minimal private-sector involvement to more comprehensive involvement.	Can lower government costs. May increase creativity and expertise used in financing infrastructure. The private sector may be able to take on more debt than municipalities. May allow certain projects to proceed that would not have proceeded otherwise.	May present various risks to the public sector. May be difficult to evaluate because there are so many variations. Competitiveness of private companies may mean it is difficult to generate profit, and some argue that quality could be compromised in these projects.	One-Time financing.	The public is not required to pay or repay for anything, however, in return for agreeing to provide the service, the private partner receives payment according to certain standards of service or other criteria as specified in the contract. The payment may be in the form of a fee, tariff or user charge.	The cost to the public may be reflected in the fee, tariff or user charges charged by the private sector.	No.	Used in the United States, and becoming more common place in Canada and the world.	Yes. PPPs may be used to fund wastewater projects. This has already been accomplished with projects in Canada and the United States.	<i>Infrastructure Financing: A Literature Review of Financing Mechanisms, Research & Analysis of Infrastructure Canada.</i> ; <i>BBC News, "What are Private-Public-Partnerships?"</i> , http://news.bbc.co.uk/1/hi/uk/1518523.stm .
BOO (BUILD-OPERATE AND OWN)	A type of P3 used in both developed and developing nations. With this type of mechanism, a private company or consortium of companies receives a concession to finance, build and operate a facility for a fixed period of time, after which ownership reverts back to the public sector.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	No.	BOO mechanism have been used to build wastewater treatment facilities in Canada and the United States.	Yes. BOOs may be used to fund wastewater projects.	<i>Washington Policy Website:</i> http://www.washingtonpolicy.org/Transportation/PNPublicPrivateTransportation97-05.html
BOT (BUILD-OPERATE AND TRANSFER)	A type of P3 used in both developed and developing nations. The private sector designs, finances, constructs, and operates the revenue-producing public projects, and, at the end of the pay-back period, turns the project back over to the community.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	No.	The Ambassador Bridge connecting Detroit, Michigan and Windsor, Ontario was built and is owned by a private consortium, which accepts all the risks associated with the construction, ownership and operation of the bridge.	Yes. BOTs may be used to fund wastewater projects.	<i>Washington Policy Website:</i> http://www.washingtonpolicy.org/Transportation/PNPublicPrivateTransportation97-05.html
PRIVATE FINANCE INITIATIVE (PFI)	United Kingdom funding mechanism. Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	Refer to P3s above.	No.	Used in Britain, called PFIs but can also be referred to as PPPs. Since January 2003 the London Underground has been operated as a Public-Private Partnership (PPP), where all the infrastructure is maintained by private companies although the Underground (the London subway) is still owned and operated by Transport for London	Yes. PFIs may be used to fund wastewater projects.	The Infrastructure Funding Gap: Time for Innovation, April 2004; Wikipedia: London Underground., http://en.wikipedia.org/wiki/London_Underground#Public-Private_Partnership .
PUBLIC										
TRANSFER PAYMENTS	In Canada, transfer payments are made from the federal or provincial government levels to the provincial and municipal government levels. Transfers may be non-specific and unconditional or specific and conditional. Greater federal control means that the federal government can better leverage policy and program goals and outcomes.	Allow for equality between different regions of Canada. Improves access of certain municipalities to Infrastructure.	Those paying for the infrastructure are not necessarily the ones using the infrastructure.	One-Time financing.	Repayment is not expected in Canada.	N/A	The leveraging potential depends on the terms and conditions of the transfer payment.	Very common in Canada. The federal government commonly issues transfer equalization payments between the provinces and territories in Canada.	Yes. For example, a municipality could use part of a transfer payment to fund a wastewater treatment plant project.	<i>Infrastructure Financing: A Literature Review of Financing Mechanisms, A Report Prepared by the Research & Analysis of Infrastructure Canada, January 2004</i>
GRANTS	Non-repayable, unconditional transfer of funds from the federal or provincial government levels to the provincial and municipal government levels, an individual or an organization which is not subject to being accounted for or audited but for which eligibility and entitlement may be verified or for which the recipient may need to meet pre conditions.	The recipient does not have to use its own resources to pay the costs of the specific services that the grant fund covers. Municipal or provincial governments can use grant funds to leverage additional funding on capital markets, or through other government programs.	Grants limit the number of projects that can be supported, since they allow no cost recovery. Applying for grant programs is not simple, and may require significant financial and administrative resources.	One Time.	No.	N/A	No. Grants do not have terms or conditions attached to them.	Grants have been used in Canada and the United States	Yes. A municipality could use a grant to fund a wastewater treatment plant project.	<i>Beyond Infrastructure Canada Innovative Financing Options</i> , Prepared for Environment Canada by Gardner Pinfold Consulting Economists Limited, February 2001.;

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CONTRIBUTIONS	Non-repayable, transfer of funds with conditions from the federal government to provincial and municipal governments, an individual or an organization. A contribution is a payment to an organization for specific purposes and costs meeting certain eligibility requirements and the terms of a Contribution Agreement.	The provincial and municipal governments do not have to use their own resources to pay the costs of the specific services that the contribution covers.	Contributions limit the number of projects that can be supported, since they allow no cost recovery. Applying for a contribution is not simple, and may require significant financial and administrative resources.	One Time.	No.	N/A	Yes. Contributions may have terms and conditions such that outcomes and goals are leveraged.	At Infrastructure Canada, there are 4 funding programs: CSIF, ICP, MRIF and BIF.	Yes. A municipality could use a contribution to fund a wastewater project.	Western Economic Diversification Canada website: http://www.wd.gc.ca/gandc/default_e.asp ; Infrastructure Canada website: http://www.infrastructure.gc.ca/funding/index_e.shtml ; Grants and Contributions Management, Canada School of Public Service, Participant's Manual, March 2004.
TAXATION	Taxes are used at all levels of governments to generate revenues.	Based on a stable tax base.	May be insufficient, and is not uniformly applied across all properties. It may be difficult to develop and set the appropriate rate.	Sustainable	No.	Can be quite significant ranging between 26 to 53% in Western Canadian and Western US cities.	No.	Very common in Canada and the United States.	Yes. Taxes could be used to generate revenues to fund wastewater projects.	Dedicated Funding - A Best Practice by the National Guide to Sustainable Municipal Infrastructure
USER BASED										
SPECIAL DISTRICT FINANCING	Often used in combination with development charges to finance new infrastructure projects that will benefit directly those living in the area serviced by the new infrastructure.	Those most likely to benefit from the new infrastructure are those who are paying. Further, there is a demand management aspect built into this type of model because users pay a rate for water depending on the amount used, and this provides an incentive use less water.	Special district financing is intended primarily for financing current operations and lifecycle renewal costs of the existing infrastructure, rather than for funding the construction of new infrastructure or infrastructure extension.	May be sustainable or one-time.	No.	Those most likely to benefit from the new infrastructure are those who are paying. Users of the service pay a rate depending on the amount of the service used.	No.	Common in the United States.	Yes. Could be used to fund part of a wastewater infrastructure project. May have limited applicability for municipalities with smaller populations, as charges could be quite high.	Dedicated Funding - A Best Practice by the National Guide to Sustainable Municipal Infrastructure
DEVELOPMENT CHARGES AND FEES	In order to fund new infrastructure, municipalities will use a Development Charge instead of a property tax increase.	New infrastructure will be built, but only if there is a demand.	It may be difficult to develop and set the appropriate rate.	May be sustainable or one-time.	No.	Administrative costs may be substantial in operating such a system.	No.	Canada has been using this financing mechanism for over 20 years. There are many examples included in the Alternative Funding Mechanisms document as part of the Best Practice by the National Guide to Sustainable Municipal Infrastructure.	Yes. Is similar to a property tax increase. Revenues from a development charge or fee can be applied to pay off a wastewater infrastructure project.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure
SPECIAL LEVIES	Economic Instruments that ensure a funding source exists to cover needs that are difficult to fund through user pay, and for which there is a benefit in explicitly identifying them separately from the general tax levy. Typically, this method is accompanied by a special fund established by the municipality to manage the special levy revenue.	A municipality may have a higher standard of accountability to the project with a special levy.	Costs for establishing a special levy can be considerable. Communication challenges with convincing the public. Greater potential for larger municipalities to generate significant revenues. It may be difficult to develop and set the appropriate rate. would not be feasible for municipalities to have a high number of special levies, as they would no longer be "special."	May be sustainable or one-time depending on if the special Levy is set up for a specific time period or is set indefinitely.	N/A	The public pays the user cost or special levy.	No.	Has been used in the United States (Portland transit system), Australia (watershed protection), and Alberta (infrastructure replacement), Winnipeg (sewer and water), etc.	Yes, but depends on whether the municipality can convince the public that a special levy is required.	Alternative Funding Mechanisms - A Best Practice by the National Guide to Sustainable Municipal Infrastructure