THE CORPORATION OF THE NATION MUNICIPALITY

ROADS DEPARTMENT

1. INTRODUCTION

1.1 Overview

The Nation Municipality, which is situated in the United Counties of Prescott and Russell in Eastern Ontario, has an area of 661 square kilometres and a population of approximately 11,000. The Nation was formed on January 1st, 1998, with the amalgamation of the Townships of Cambridge, South Plantagenet, Caledonia and the Village of St. Isidore. It is comprised of the communities of Limoges, Cambridge Forest Estates, Forest Park, St. Albert, St. Isidore, Fournier, St. Bernardin, Riceville, Ste. Rose de Prescott, Caledonia Springs, McAlpine, Routhier, Ettyville, Pendleton, Westminster, Lemieux, Séguinbourg and the outskirts of Casselman.

The Nation Municipality is situated close to several large centres. The Quebec border near the City of Montreal is a twenty minute drive to the east, the City of Cornwall and the American border is a 35 minute drive to the south and the City of Ottawa, Canada's Capital is just to the west.

Proper management of road salt has been a significant concern to The Nation Municipality's Department of Roads for many years. However, the issue has taken on increased significance in recent years as a result of increased urban development and traffic, liability issues associated with traffic, and environmental issues associated with salt contamination of soils, surface and ground waters.

In August 2000, Environment Canada concluded a five-year study of road salts. The Priority Substances List Assessment Report for Road Salts was issued in 2001, under the Canadian Environment Protection Act (CEPA). This report concluded that road salts that contain inorganic salts with or without ferrocyanide salts are entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long term harmful effect on the environment or its biological diversity or that constitute or may constitute a danger to the environment on which life depends. Therefore, it was concluded that road salts that contain inorganic chloride salts with or without ferrocyanide salts are toxic as defined in Section 64 of the Canadian Environmental Protection Act, 1999. It must be noted that Health Canada stated that road salts are not harmful to humans.

The CEPA Report goes on to note that the use of de-icing agents is an important component of strategies to keep roadways open and safe during the winter. Any measures developed as a result of this assessment must never compromise human safety, and the selection of options must be based upon optimisation of winter road maintenance practices so as to not jeopardise road safety, while minimising the potential for harm to the environment.

The Environment Canada Priority Substances List Assessment Report for road salts identifies four key areas of concerns: patrol yards, roadway application, snow disposal and ferrocyanides (which is an agent added to the crushed salt to prevent clumping).

Although Environment Canada has not as of this time declared road salt to be a toxic substance, it is anticipated that the future use of de-icing chemicals will be contingent on a combination of initiatives:

1. Road authorities will be required to show that all potential opportunities to control and minimise salt use have been addressed. Application rates will have to reduce relative to existing ambient and road surface temperatures, weather forecasts and road conditions.

2. It will be necessary to show that as much snow as possible has been physically removed from the road surface in order to minimise the amount of snow and ice to be melted.

3. It will be necessary to use equipment that can accurately control the rate of chemical application and ensure that the material is applied to the roadway so as to reduce the amount of salt used.

4. Maintenance staff will have to be trained and the training documented to ensure that staff is familiar with the factors affecting the need to apply chemicals and the required application rates.

5. There will be a need to more accurately monitor the amount and location where chemicals are applied, and document the results.

Given the environmental concerns regarding road salt, The Nation Municipality has developed this Salt Management Plan. This will address growing concerns about the effect road salt is having on our natural environment and, at the same time, continue to provide for road safety by better managing our use of salt.

1.2 Organisation of the plan

The Salt Management Plan information is organised into the following chapters.

Chapter 2.0 of the Plan presents the Salt Management Policy Context approved by the Council of The Nation Municipality.

Chapter 3.0 of the Plan presents the existing Winter Maintenance Practices and Policies that are relevant to salt management. This section of the Plan is divided in a series of subsections, which describes baseline practices and objectives.

Chapter 4.0 of the Plan presents the Strategies and Salt Management Goals. This section of the plan describes the general objectives of the Plan related to the operational practices and strategies.

Chapter 5.0 of the Plan presents the vulnerable areas related to winter maintenance and salt management within the jurisdiction of the Counties.

Chapter 6.0 of the Plan presents Conclusions and Recommendations to the existing winter maintenance practices and policies and assets identified as requiring immediate attention or annual attention, short and long term goals.

Chapter 7.0 of the Plan presents Appendices of the programs and procedures in order to monitor the implementation of the Plan and to maintain and update the Plan.

2. SALT MANAGEMENT POLICY

The United Counties of Prescott & Russell Official Plan supported by The Nation Municipality has, as part of its Public Health and Safety Policy, strategic objectives of protecting the environment and to promote quality of life and self-sufficiency for the citizens. The objectives of the Transportation section of the Official Plan are to ensure that the road network will function in a cost effective, efficient and safe manner for the movement of people and goods throughout the territory. This Salt Management Plan supports the Official Plan, the visions and goals of the municipality.

The implementation and improvements of the Salt Management Plan will promote the continuous development of practices and procedures to improve winter maintenance activities and procedures while striving to reduce the effects of road salt on our environment.

The Plan demonstrates The Nation Municipality’s commitment to reducing the environmental effects of excessive salt use, consistent with Environment Canada’s stated objectives. It is the municipality’s policy to take the necessary measures to manage road salts in a manner that protects the environment without compromising road safety.

In order to meet these objectives The Nation Municipality will manage road salts in accordance with the Code of Practice for the *Environmental Management of Road Salts and comply with applicable laws and regulations.* The Nation Municipality staff will be kept informed and trained about the environmental practices related to road salts. The Plan is a dynamic document. Management will conduct regular management reviews and make improvements wherever feasible and update on a regular basis.

The Nation Municipality Roads Department policy on the use and management of road salts will be:

- To comply with all applicable federal and provincial legislation regarding the storage and use of snow and ice control products.
- To use road salts in an environmentally responsible manner, and minimise the negative environmental effects of handling, storage and application of salt on the environment.
- In providing the stated Level of Service, it will conserve the use of salt by using the most cost-effective technologies and practices.

The Salt Management Plan is activity based and follows certain framework. The municipality is committed in the:

- Periodic review and analysis of industry practices
- Implementation and documentation of the Plan
- Education and training of staff
- Monitoring and analysis of operations
- Management review and revisions
- Environmental review
- Policy and practices revisions

3. EXISTING WINTER MAINTENANCE PRACTICES AND POLICIES

3.1 Introduction

The Nation Municipality Road System is a network of rural roadways intended for local traffic in a safe and efficient fashion toward the counties roadways. The Nation Municipality is responsible for approximately 500 kilometres of roads, 14 kilometres of sidewalks, 18 kilometres of storm sewers and 40 bridges that cross sewers and drains. The Municipal Road network is depicted in Appendix “A”.

The Nation Municipality has one level of service throughout it’s territory; it is generally maintained on a 24-hour basis. The Nation Municipality roads are maintained by it’s employees and salt/snow plough trucks. The municipality respects and follows the provincial minimum standards.

3.2 Level of Service Policies

The Nation Municipality follows the provincially established minimum standards as per Regulation 239/02 (see Appendix "B"); the following are guidelines of how the Municipal Roads Department operates during the winter period.

3.2.1 Patrolling

During weekdays regular shift 7:30 a.m. to 4:00 p.m., patrolling will be done by area foremen.

During night time from 4:00 a.m. to 7:30 a.m. the patrol is done again by our area foremen and also in conjunction with the United Counties of Prescott and Russell area patrolmen. Our patrolling time schedule is shared among our patrollers so that rest can be allowed for those foremen.

3.2.1.1 Storm Response

The patrolmen and the supervisors rely primarily on Environment Canada's public weather forecasts from the Ottawa International airport weather forecast. The Nation Municipality does not own any RWIS stations and does not use this service. The Nation Municipality has equipped all it's employees with a handheld two way radio system.

3.2.1.2 Record Keeping

The patrolmen and supervisors keep logbooks of their daily activities, call-outs and weather and storm information. The operators also keep logs of their daily time and operations and of solid material spread. Data from the electronic controllers is not used at this time.

3.2.2 Sanding, Chips and Salting

For the purpose of planning the winter spreading operation, the objectives of treatment are to achieve centre bare pavement by applying a mixture of salt, sand and chips: 4000 kg of salt, 4000 kg of sand and 4000 kg of chips within two (2) hours after the storm. The time lapse between successive treatments, if required, should not exceed 4-4½ hrs.

Gravel roads are sanded or ice bladed when the roads become quite slippery.

<u>Sanding</u>

Sand and Chips are used as an abrasive to provide traction on slippery surfaces. It will be used most often when the temperature is too low for salt to be effective. Sand is most effective in providing traction of dry hard snow.

As a general rule, salt, sand and chips will be used at all times for our winter control.

Sanding and chips, when required, should normally follow after the plowing operations. This minimises the amount of sand being pushed off to the side of the road.

As a general rule, if the pavement is dry and the snow is not packing or sticking, no sand and chips are spread.

Salting

Salt applied to snow forms a brine mixture. This reduces the possibility of the snow sticking to or packing on the pavement. It also prevents ice build-up and allows the plows to remove the snow more easily. Salt, assisted by sun, traffic and warmer daytime temperatures, is also used as a melting agent to eliminate icy conditions.

As the temperature falls, the effectiveness of the salt decreases until it becomes ineffective. Normally, salt should not be applied when the temperature is below -15°C. However, in the presence of sun and heavy traffic volume, which creates a higher road surface temperature, salt can be effective to a temperature of -20°C.

Salt should be applied a minimum of 0.5 hour in advance of plowing to prevent the salt from being pushed off before it has had a chance to work. This is consistent with salt being used to assist in the plowing operations. The lower the temperature is, the longer it will take for the salt to work. Salting operations should not take place in anticipation of a storm.

As a general rule, salt should not be applied during night hours until **4:00 a.m.** since nighttime temperatures are usually lower and sun & traffic volumes are not present to enable salt to work effectively. However, at night, if the temperature is high enough and not dropping, then salting operations may be carried out at the beginning of or during the storm. (i.e. temperature is above -7°C with wet snow, sleet or freezing rain, salting is done after the storm to bare pavement and should be done after **3:00 a.m.**

If the pavement is dry and the snow is not packing, roads should not be salted.

3.2.3 Plowing

For the purpose of planning the winter plowing operations, the objectives that apply to The Nation Municipality roads are to complete one coverage of the roads in both directions in an average time not exceeding 4 - 4½ hrs from the start of operations. The time lapse between successive treatments, if required during longer storms, should not exceed six (6) hours.

When storms occur during the night, the objective will be to open all roads by 7:00 a.m. the next morning.

During a storm, if accumulation of snow on the road surface does not exceed the minimum standards, drifting snow conditions may dictate the plowing schedule.

The Nation Municipality does not operate a night-time plowing shift of personnel. Except for patrolmen, plows will generally not operate during the night unless the minimum standard applies.

The order of priority of plowing operations is to be performed as follows:

i) As per plan for particular snowplow routes or;

ii) As road conditions dictate on various sections of a plow route;

iii) Shoulders may be cleared after a storm to prevent drifting and to provide additional storage for future storms. However, if accumulations are excessive, due to the intensity of the storm and high windrows have resulted from plowing through lanes, then the shoulders can be cleared during a storm to provide greater storage. This operation may involve the use of snow blowers or loaders in addition to the snowplows.

iv) Lowering snow banks

Step winging and lowering snow banks on shoulders at traffic islands and intersections will be performed during periods between storms.

If the road has been salted, plowing should start approximately 0.5 hour after to prevent pushing the salt off the road before it has a chance to work. The colder the temperature (less than -12ºC, the longer it will take for the salt to work and therefore, the time should be increased.)

3.3 Patrol Yards

3.3.1 Introduction

Summer and winter maintenance services are provided through three patrol yards: St-Bernardin patrol yard, located at 6950 County Road 22, services the eastern part of the Municipality. The Fournier patrol yard, located at 3248 County Road Number 9, services the central part of our Municipality. Finally, the Casselman patrol yard, located at 958 Route 500 West, services the western part of our Municipality (refer to Appendix C). We have also a garage located at 25 Arena Street in St-Isidore for the plowing and snow removal activities within the village.

3.3.2 Equipment

Each patrol yard maintains a variety of equipment including plows, spreaders and combination units (see Appendix D). There are no anti-icing devices for the Department. The newest equipment that we own has been purchased with electronic controllers.

3.3.2.1 St-Bernardin Patrol Yard

The St-Bernardin site has two tandem axle and one single axle combination plow / spreader units to maintain the roads attributed to the patrol site. The three units have no electronic controllers or pre-wetting devices. The equipment is washed in the garage. Drainage of the garage goes into a storm sewer that leads into a ditch south of the salt storage shed. There is a retention pond and/or oil/grit separator in the garage.

3.3.2.2 Fournier Patrol Yard

The Fournier site has three tandem axle combination plow / spreader units. These units have no electronic devices. The equipment is washed in the garage. Drainage of the garage goes into the ditch north of the garage. There is a retention pond and or oil/grit separators in the garage.

3.3.2.3 Casselman Patrol Yard

The Casselman site has three tandem axle combination plow / spreader units to maintain the roads attributed to the patrol site. One unit is equipped with on-board electronic controllers. The two other units have manual controllers and no pre-wetting devices. The equipment is washed in the garage. Drainage of the garage goes into a storm sewer that leads into a ditch north of the garage. There is a retention pond and/or oil/grit separators in the garage.

3.3.3 Salt and sand storage

3.3.3.1 St-Bernardin storage

The St-Bernardin salt/sand and abrasive storage is a shed of 12 m by 12 m, which is sitting on a 1.2 feet concrete wall. It is vented to control humidity levels and the floor is paved to minimise any potential seepage into the groundwater. There is a three foot deeper loading area which permits easy loading of vehicles beside the salt storage facility. Positive drainage is provided away from the dome in all directions. The storage has two accesses consisting of a double door for the vehicles filling up the storage area.

3.3.3.2 Fournier dome

The Fournier salt/ sand and abrasive storage is a shed of 13 m by 13 m. The shed provides overhead cover to protect the salt from the weather. It is vented to control humidity levels and the floor is paved to minimise any potential seepage into the groundwater. Positive drainage is provided away from the dome in all directions. There are two doors with sufficient clearance in order to permit loading of both the facility and vehicles with salt and sand.

3.3.3.3 Casselman dome

The Casselman dome is a conventional circular dome. The dome provides overhead cover to protect the salt from the weather. It is vented to control humidity levels and the floor is paved to minimise any potential seepage into the groundwater. Positive drainage is provided away from the dome in all directions. Although there are no doors, there is sufficient clearance in order to permit loading of both the facility and vehicles with salt and sand inside the facility.

3.4 General Salt and Sand Use

Salting applications

1) Salt, chips and sand are to be applied in a narrow strip, approximately 30cm wide, down the centre (crown) of the two lane highway. On super-elevated sections (curves), the salt and sand should be kept as high up on the curve as possible to allow the brine to flow across the two lanes.

2) To apply a narrow strip of salt, sand and chips, the discharge spout must be used on spreaders that have them to prevent salt and sand from dropping onto the spinners. The deflectors must be used on spreaders when applying salt, sand and chips.

3) The spinners should be used only to spread salt, sand and chips on pavement with:

a) surfaces which are rough (such as high float);
b) distorted crossfall, or;
c) no crossfall.

In these situations, the brine cannot flow across the pavement, and consequently a narrow strip will not be effective.

4) The standard rate of salt, sand and chips application is 100 kg/km of two-lane highway. This rate is to be used on all occasions except in cases where the area foreman thinks otherwise.

a) rates less than 120 would achieve the desired results; or
b) rates greater than 100 (up to 150 kg/km maximum) would reduce the number of applications required at the standard rate.

The amount of salt in a sand and chip mix, which is around 33% of each, should be taken into account when determining the rate of salt to be applied.

5) Salt should never be applied to snow packed gravel surfaces. Salt aids in speeding up the thawing of the snow pack during sunny periods. This increases the occurrence and severity of potholes in the snow pack, as well as the gravel surface in the spring.

<u>Sanding applications</u>

1) The spinner on the spreader should be turning at such a rate that sand and chips are cast only on the pavement. Spread width should be between 2 and 2.5 m along the centre of the road.

2) Areas that might require a heavier application of sand and chips are curves, bridge decks, intersections and hills. If controlled sanders are being used the operator will have to adjust the controls at these locations to allow for extra sand and chips to be placed on the roadway.

3) Ensure that sand and chips are not applied within 3 m of railway crossing tracks, to prevent sand and chips from being carried onto the tracks. Sand and chips carried onto the trucks must be removed from the flangeways, immediately.

3.5 Snow disposal

To understand winter maintenance operations, it is important to know that both the upper and lower tier governments of Prescott and Russell share the provision of winter maintenance. In general, The Nation Municipality is responsible for sanding, salting and snowploughing its 500 lane kilometres road network. Snow removal in the urban areas on County Roads is done by the municipality. Many years ago, Counties signed an agreement with the local municipalities that should they want the snow removed in the urban areas on County Roads, it would be the local municipalities' responsibility. Therefore, the Counties have no snow disposal sites.

As stipulated in the *Public Transportation and Highway Improvement Act*, maintenance of snow clearing and removal on paved shoulders and on sidewalks on County Roads is a lower tier responsibility therefore this is done by the local municipalities.

The Nation Municipality has three disposal sites for the purpose of snow removal within its territory. The Municipality will ensure that its disposal sites are not near water wells either municipal or private. It will make every effort to control the water from draining into the river, creek or any other waterway, by erecting berms to minimize salt from draining into those vulnerable areas.

a) Site one is in the Village of St-Isidore on 4680 Ste-Catherine Street;
b) Site two is in the Village of St-Albert on 149 St-Paul South;
c) Site three is in Village of Limoges on 186 Pavillon Drive;

3.6 Training

The Roads Department provides training in winter control to its foremen through different workshops such as OGRA, TAC and MTO.

4. STRATEGIES & SALT MANAGEMENT GOALS

4.1 Level of Service Policies

4.1.1 Patrolling

Unless legislation such as labour regulations and minimum standards requires a change, the patrol program of the Municipality meets and exceeds existing standards therefore no changes are necessary.

4.1.2 Storm Response

Now that all patrol yards have Internet access, the use of Internet weather casting will be relied upon. The Nation Municipality will be looking into applying in the near future for access to the MTO's RWIS Network. Truck mounted IRT units should be installed on the patrolling vehicles as a short-term objective.

4.1.3 Record Keeping

The existing record keeping meets the standards however, all this information is done manually. Until the technology is fully available, salt and brine use will be logged for year-end conciliation manually.

Ultimately, electronic record keeping will avoid any human errors or discrepancies. Once the electronic controllers are installed on all the winter maintenance vehicles, a much more precise and better control will be established. The electronic control devices shall be equipped with printout or download capability.

As a longer-term goal, The Nation Municipality is also looking into implementing to have GPS tracking and record-keeping capabilities (GPS/AVL) on all winter maintenance vehicles, which will monitor material usage at the beat level.

4.1.4 Sanding, Chips and Salting

The goal is to reduce the amount of salt used on our roads and electronic control devices should limit misuse of salt or waste with a steadier flow. The electronic control devices shall also limit the human error factor.

The existing policies meet or exceed the provincially established minimum standards. With the proper equipment, it is easy to adapt to abnormal weather conditions.

4.1.5 Plowing

The existing standards meet or exceed the provincially established minimum standards. No changes are foreseen for this section.

4.2 Patrol Yards

4.2.1 Equipment / Garages

The Roads Department is committed to installing on all trucks, electronic control devices. The goal is to install the units as the trucks are being replaced. It has been proven that these units will improve the efficiency of winter maintenance and limit waste of salt. The electronic controllers shall also be equipped with printout or download capability.

On a longer-term basis, on-board weather IRT's should be installed on all the winter patrol maintenance units.

Calibration of the equipment shall be done every fall prior to each winter season. A calibration procedure should be developed and implemented.

The equipment shall continue being washed inside the garage, as much as possible. An investigation of different options for all three facilities to manage the wastewater should be done. Once this is done a strategy to manage wastewater and cleanout materials from retention ponds and oil/grit separators should be established.

4.2.2 Salt, Chips and Sand Storage

The objective is the prevention or control of releases from existing and new sites.

All our sheds and storages are well maintained and ensure that our mixture is protected from precipitation. All new storage facilities should be designed in accordance with established best management principles.

Handling/ loading and storage shall continue to be done inside the buildings. Floors should be inspected annually to assure that they are impermeable.

4.3 General Salt, Chips and Sand Use

The objective of this plan is to reduce the negative impacts of road salts by delivering the right amount of road salts in the right place at the right time.

Technologies exist to reduce the use of road salt while maintaining or even improving the level of service provided.

Road salt applied by using a mixture of salt, chips and sand, prevents the mixture from being blown away by wind or by traffic. It allows also where traffic is light, a better traction for vehicles on icy roads. It also allows the salt to stay in the roadway and when better conditions allow; either by warmer weather or higher traffic, the salt melts the snow and achieves its purpose.

The use of electronic controllers should eliminate human error, discrepancies in salt and sand used and therefore maintain uniform application.

Anti-icing, which consists of placing brine or other de-icing chemicals in liquid form onto dry pavement as a pre-storm treatment, has been considered but has not been retained as an option until now. Due to the fact that larger quantities of materials must be premixed, larger holding tanks are required on the equipment and the necessity of specialised (one use) equipment; this option will not be considered. This option is often used in areas that are considered to be critical due to the physical nature of the area. The Nation Municipality does not have enough of these areas in order to justify this expenditure.

Also, the use of liquid anti-icing is not recommended during either a freezing rain or sleet storm or when pavement temperatures are lower than -5 Celsius. Under these circumstances it is recommended that our mixture of salt, sand and chips be used.

Therefore for budgetary and lack of space purposes, anti-icing has not been considered for The Nation Municipality area.

4.4 Training

The ultimate goal is to train all personnel and to have an on-going training program involved with managing or performing winter maintenance activities involving the use of salts. Annual training on good housekeeping practices should be done by fall of each year. All employees affected by technology changes shall be trained for the use of the new equipment. Training will include rock salt and handling and how their activities affect the environment, plowing and spreader control. It will also include weather and pavement temperatures and RWIS.

5 VULNERABLE AREAS

In 1999, the United Counties of Prescott and Russell and the United Counties of Stormont, Dundas and Glengarry initiated the Eastern Ontario Water Resources Management Study (EOWRMS), which encompassed an extensive compilation and evaluation of regional water resources and servicing infrastructure information. The Final report was submitted in March 2001. (See United Counties of Prescott & Russell for reference)

The project study objectives are summarised as follows:

1- Develop a database and geographic information system on the state of water resources and servicing infrastructure within the study area;
2- Develop data management protocols to ensure the database is properly maintained and updated;
3- Assess the capability of key areas to potentially support development on private services;
4- Identify potential cost-effective servicing alternatives on a regional basis;
5- Develop community demonstration projects that provide integrated solutions to water resource issues on local/ regional basis;
6- Develop and promote tools and action plans to protect the quality and quantity of regional water and related land resources.

From these objectives many different analyses were done. The Database compilation section permitted to collect the geographic data used to evaluate the regional water budget, land use and ground and surface water characteristics are the most beneficial for the purpose of this report.

The EOWRMS study carried out a detailed analysis of individual components of the hydrological cycle as they affect the quantity and quality of the water resources across the region.

The study also analysed the quality of surface water, which also impacts its ability to act as receiving streams for wastewater discharges from agricultural, industrial and municipal wastewater sources. Surface water quality is also a principal factor in the determination of the quality and viability of aquatic habitat that exists in various parts of the region.

The groundwater analysis component of the study was undertaken to:

1- Define and map aquifer extents and connectivity
2- Quantify groundwater recharge
3- Characterise aquifer natural water quality
4- Characterise current and additional aquifer capability
5- Characterise the intrinsic aquifer vulnerability to contamination.

The report presents a characterisation of the location, nature, and extent of agricultural land use within sub-watersheds related to surface water resources in the projected area. The sub-watersheds represent land units that contribute to the surface water within a defined area of the surface drainage network, but they also include areas where the partitioning of excess water is primarily to deep groundwater resources. Analysis was done to show the relationship between agricultural activities and major aquifer, areas of recharge and discharge. The combined analysis allowed for the identification of sensitive areas and areas with development potential or constraints.

Further to this study the Counties GIS database now includes such information such as the different classes of fish habitat, significant woodlands information, wetland classification. The study also identified geological topography, such as aquifer vulnerability, the establishment of types of soils and the land use throughout our counties such as agricultural and types of crops, wetlands, woodlands etc…

Floodplains, ground and surface water quality and ground water recharge areas were also identified. Unfortunately, the study did not cover bird, waterfowl and wildlife species habitat.

Due to the voluminous size of the report and of its many appendices, it is not part of this report but is available for reference.

From this study it is shown that in general, the Counties do not have significant wetlands adjacent to roads, ground and surface water zones that are vulnerable. The

Alfred and Moose Creek Bogs are located in our municipality and they are adjacent to municipal roads. The slight impact does not affect these gravel roads.

Significant fish habitats are in rivers such as the South Nation River and the Ottawa River and some of their tributaries. The dilution rate is high and residential development is low near these rivers due to their high flows.
The study is a great tool and the information generated by it allows the Counties and Municipalities to identify any future or possible vulnerable areas.

Since The Nation Municipality resides within the United Counties of Prescott-Russell, we accept this study and will work with the Counties to ensure proper follow up.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter of the Plan presents the objectives for each of the key operational practices and strategies related to the effective management of road salt during winter maintenance activities. Some of the objectives are general and some are very specific. Each objective recognises that the Plan is dynamic and will take time to implement due to local budget considerations and restrictions. Therefore, each objective will be divided in three different timelines: Immediate Actions, Short Term Actions and Long Term Actions. For the purpose of this report the Short Term Actions will be within the next five years and the Long Term Actions will be within the next ten years.

6.2 Summary of Recommendations and timelines

PROGRAM	Annual Action	Short Term Action	Long Term Action
Level of Service			
i)General / Patrolling			
➢ Revise and Revise the LOS policy in light of the minimum maintenance standards annually;	X		
➢ Monitor and Report on compliance with LOS policy annually;	X		
➢ Review routes in order to achieve optimal LOS.	X		
ii) Storm Response			
IRT's			
➢ Provide truck mounted IRT's on patrolmen vehicles;		X	
➢ Provide training in use of IRT's.		X	
RWIS			
➢ Make MTO's RWIS sites available to winter maintenance patrolmen and area foremen;		X	
➢ Provide annual training in use of RWIS information.		X	
iii) Record Keeping			
➢ Develop and implement a record keeping program that uses the data supplied by the electronic spreader controllers;			X
➢ Provide GPS / AVL tracking and record keeping capabilities on all winter maintenance vehicles;			X
➢ Provide training in use of GPS / AVL.			X
iv) Sanding & Salting			
➢ Develop and implement a record keeping program that uses the data supplied by the electronic spreader controllers;			X

➢ Develop guidelines that address preferred application rates and experience performance on the road; ➢ Develop and implement a calibration procedure including recalibration in case of repairs; ➢ Ensure that a calibration history for all spreaders are maintained annually; ➢ Develop and follow standardized application rates for all materials related to pavement temperature and precipitation. v) Plowing ➢ Review and revise plow routes annually in order to achieve optimization of LOS.	X X	X X X	
Patrol Yards i) Equipment ➢ Ensure that all new spreader equipment has regulated electronic controller capabilities; ➢ 100% of equipment used to spread sand and salt shall have ground speed regulated electronic controllers with printout or download capabilities; ➢ Provide training to those using regulated electronic controllers; ➢ Ensure that when salters are replaced that they are a minimum of 9.23 cubic meters in capacity. ii) Garages ➢ Develop a strategy to manage washwater and cleanout materials in all three garages by either installing retention ponds and/or oil/grit separators; iii) Salt & Sand Storage ➢ Inspect and address if necessary annually to ensure impermeable floors exist inside buildings; ➢ Ensure all new storage facilities be designed in accordance with best management practices for road maintenance yards. iv) Outside Drainage ➢ Inspect annually to ensure positive drainage still exists at all sites.	 X X X	 X X	 x X X
General Salt Use ➢ Salt, sand records be logged to allow for year end reconciliation of bulk materials; ➢ Re-evaluate the merits of anti-icing. Refer to the equipment section under Patrol Yards and salting and sanding section under Level of Service;	X	 X	
Training ➢ Provide annual training on good housekeeping practices prior to each winter season; ➢ Provide to employees affected by the changes due to new technology transfer as described in the sections above; ➢ Ultimately provide training to 100% of all employees involved with managing or performing winter maintenance activities involving the use of salt and how its activities affect the environment and the importance of the Salt Management Plan's programs.	X X		 X
Vulnerable Areas ➢ Monitor Environment Canada's approach to addressing vulnerable areas; ➢ Work with agencies (CA's, MNR, MOE) to identify new vulnerable areas; ➢ Identify strategies to reduce salt impacts to salt vulnerable areas.		X X X	
Communications ➢ The Salt Management and the winter maintenance policy and their amendments shall be published on The Nation Municipality's website.	X		
Monitoring ➢ Monitor on a yearly basis the plan and its amendments; ➢ Monitor effectiveness/performance of technology (electronic controllers, pre-wetting, IRT's, RWIS) for further reductions of salt; ➢ Evaluate latest technology for possible use.	X X X		

6.3 Conclusion

The Roads Department and Council of The Nation Municipality are committed to ensuring that the Municipal Roads are safe and properly maintained in accordance with their level of service policies while committing to reduce the environmental impacts of the snow and ice control chemicals such as salt.

This Salt Management Plan identifies how they will implement a managed salt strategy over the next decade. They will continue to monitor improvements in snow and ice control practices and revise the Plan as improved Best Management Practices become available or are revised.

7 APPENDICES

- Appendix “A” – Map of The Nation Road Network
- Appendix “B” – Regulation 239/02 Minimum Maintenance Standards
- Appendix “C” – Location of Patrol Yards on Appendix “A”, identify as A B C with dot
- Appendix “D” – List of The Nation Municipality Winter Maintenance Equipment