

Chloride Pollutant Minimization Plan

City of Joliet

Permit Number: ILG103028

2023

Prepared with Assistance from Baxter & Woodman, Inc.



Joliet is a member of the Lower Des Plaines
Watershed Group



1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by the City of Joliet to reduce the environmental impacts from the organization’s chloride related operations. The City is a discharger covered under the Time Limited Water Quality Standard for Chloride for the Chicago Area Waterways System and Lower Des Plaines River watersheds. This PMP has been prepared to meet the requirements laid out in the Time Limited Water Quality Standard (TLWQS) for Chloride. The term of this PMP covers the first 5-years of the TLWQS period and will be updated following the re-evaluations at Years 4 ½, 9 ½, and 14 ½.

Chloride is a permanent pollutant. It does not degrade over time and continues to accumulate in the environment. Proactive measures to reduce the amount of chloride discharged can help reduce the impacts from chloride on receiving waterways and the environment. Chloride impacts aquatic life, vegetation, and infrastructure. As the chloride concentrations increase and our waters become saltier, aquatic and plant biodiversity decreases and native species are overtaken by salt tolerant invasive species.

Chlorides are commonly found in road salt, fertilizers, water softeners, dust suppressants, and certain industrial processes. Chloride-based deicers, like rock salt, are used on parking lots, sidewalks, and roads to provide safe surfaces to the public during the winter months. These deicers are one of most common sources of chloride in the Chicago region.

The water quality standard for chloride for the Chicago Area Waterway System (CAWS) was updated as part of the rulemaking process related to changing the designated use of the CAWS. The chloride standard was updated from 1,500 mg/L during the winter and 500 mg/L during the summer to 500 mg/L all year round. The change in the chloride water quality standard took effect in 2018. Because portions of the CAWS were not going to meet this new standard due to the need to maintain public safety on roads, highways, sidewalks and parking lots during the winter months, a joint submittal and supporting individual petitions were submitted between 2015 and 2018 to the Illinois Pollution Control Board for a variance from the chloride standard. The joint petition laid out best management practices that can be achieved by the petitioners to reduce their chloride use while maintaining public safety during winter storms. In addition to the CAWS, portions of the Lower Des Plaines River watershed were included as it receives water from the CAWS.

On November 4, 2021, the IPCB issued an Opinion and Order for a Time Limited Water Quality Standard (TLWQS) for Chloride for portions of the CAWS and Lower Des Plaines River watersheds. The TLWQS for Chloride watersheds are defined in the Opinion and Order as the Des Plaines River watershed from the Kankakee River to the Will County Line (except for the DuPage River watershed) and the CAWS watershed (except the North Branch Chicago River watershed upstream of the North Shore Channel and those portions of the watershed located in Indiana). This is a watershed-based approach to reduce the chloride concentrations in the CAWS and Lower Des Plaines River. The TLWQS for Chloride requires all dischargers covered under the TLWQS for Chloride to create PMPs and implement specific best management practices based on their operations to reduce their chloride discharges.

2.0 Organization Info, Facilities’ Specific Info

2.1 Facility overviews/descriptions

Agency Name: City of Joliet		
Facility Name: City of Joliet Public Works		Permit Number: ILG103028
Facility Address: 1203 Cedarwood Dr		
City: Joliet	State: IL	Zip Code: 60403

The City of Joliet is located in Will County. The City services a population of over 150,000. The City maintains 600 centerline miles of arterial, collector, and residential street and many of these street have multiple lanes. Joliet clears most streets within the city limits, however there are a number of roads that are the responsibility of other governmental agencies. For example, the Illinois Department of Transportation (IDOT) plows Larkin Avenue, Plainfield Road (west of Raynor Blvd), Chicago Street (south of fifth avenue), Jefferson Street (west of Larkin Avenue), and Theodore Street (east of Cedarwood Drive). The County of Will plows Briggs Streets and Gougar Road. Kendall County plows Ridge Road. During the winter season, the City uses a Priority Ranking System to prioritize salting and snow plowing. This system is outlined in the City's Snow Removal Policies and Procedures Manual. High traffic main roads within the City are cleared first, and then the secondary roads and local roads within subdivisions are cleared.

The City stores salt and deicing materials at three Public Works facilities located throughout the City. The salt storage facility at 818 E. Cass Street has a capacity of 1,500 tons. The facility at 1203 Cedarwood Drive has a capacity of 2,500 tons. The facility at 2001 Arbeiter Road has a capacity of 2,000 tons. Salt delivery occurs annually.

All the three of salt storage structures are covered and have an impermeable floor surface designated for salt storage. The surfaces are pitched away from the entrance of the structure to prevent salt wash out of the structure. No salt is stored outside of the designated structures and salt is ordered on an as needed basis to prevent overfilling the storage. Liquid deicing compounds are stored in outdoor tanks at each salt storage facility.

2.2 Chloride Sources

The City's main chloride source is from winter road and sidewalk maintenance. The City provides winter maintenance for 600 centerline miles of arterial, collector, and residential street and many of these street have multiple lanes. The City does not have the resources to provide snow removal from sidewalks and it is the responsibility of the adjacent property owners to keep the sidewalks clear. All salt and deicing materials are stored in covered structures at three Public Works owned facilities.

The City utilizes five (5) truck-mounted deicing liquid applicators to help prevent the bonding of snow and ice to the road surface prior to an ice and snow event. The City uses a blend of organics, house-made brine, and additional chlorides to pretreat roads prior to snow events. The City has a fleet of 44 various trucks and equipment that are used in snow removal activities, including nine (9) tandem axle trucks, thirty (30) single axle trucks, two (2) motor graders and three (3) front-end loaders. The equipment is washed outside of the Public Works garage. The wash water runs to nearby sanitary sewer drains. The City has no other salt usage.

2.3 Level of Service for Winter Maintenance Activities

The City uses a Priority Ranking System to prioritize salting and snow plowing that is outlined in the City's Snow Removal Policies and Procedures Manual. High traffic main roads within the City are cleared first, and then the secondary roads and local roads within subdivisions are cleared. Further details about winter maintenance practices currently being implemented by the City of Joliet are included in the City's Snow Removal Policies and Procedures Manual, which is included as Appendix 1.

The City utilizes five (5) truck-mounted deicing liquids applicators to help prevent the bonding of snow and ice to the road surface prior to an ice and snow event. The City uses a blend of organics, house-made brine, and additional chlorides to pretreat roads prior to snow events. The City has a fleet of 44 various trucks and equipment that is used in snow removal activities. The City calibrates vehicle application rates for each truck annually.

The City uses the National Weather Service and Weather Command to track weather forecasts. The City foreman scan pavements and use 10 mounted permanent sensors to track pavement temperatures and snow melt throughout the City.

3.0 Chloride Monitoring Data

Chloride monitoring data will be collected for the CAWS and Lower Des Plaines River watersheds per the IPCB order. The data will be maintained by the workgroups. Chloride data for the CAWS will be collected by MWRD for the CAWS watershed and provided to the workgroups as part of the annual reporting as required by the IPCB order. The Lower Des Plaines Watershed Group also maintains a USGS monitoring station in the Des Plaines River at Channahon, IL that collects continuous conductivity data to estimate chloride concentrations.

The City does not perform any additional chloride monitoring and relies on the Lower Des Plaines Watershed Group for information.

4.0 Chloride Reduction BMPs for POTWs, MS4s, CSOs, Industrial Sources, IDOT/Tollway

As part of the Chloride TLWQS, specific BMPs were identified for POTWs, MS4s, CSOs, Industrial Sources, and IDOT/Tollway to reduce the chloride impact on the watershed. These BMPs will be implemented over the 15-year term and additional BMPs evaluated at 5-year intervals during the 15-year term. Further details about winter maintenance practices currently being implemented by the City are included in the snow and ice plan, which is included as Appendix 1. The BMPs identified are outlined below:

Workgroup BMP

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
The permittee must participate in a Chlorides workgroup for the CAWS or LDPR, depending on the watershed within which the facility's discharge is located.	X		The City of Joliet is a member of the Lower Des Plaines Watershed Group and City staff attends workgroup meetings.

Salt Storage and Handling BMPs

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
Store all salt on an impermeable pad that must be constructed to ensure that minimal stormwater is coming into contact with salt unless the salt is stored in a container that ensures stormwater does not come into contact with the salt.	X		All salt stored by the City is stored in three dedicated permanent covered structures on concrete pads for containment and to prevent contact with stormwater.
Cover salt piles at all times except when in active use, unless stored indoors.	X		Orders for salt delivery are regularly made to keep the storage facilities at capacity. If the City over purchases salt, the salt will be temporarily stored on an impervious pad and covered with tarps.

<p>For working areas, provide berms and or sufficient slope to allow snow melt and stormwater to drain away from the area. If snow melt and stormwater cannot be drained away from the working area, channeling water to a collection point such as a sump, holding tank or lined basin for collection, discharge at a later time, use for prewetting, and use for make-up water for brine must be considered.</p>	<p>X</p>		<p>All salt is stored inside the permanent structures. The impervious surface of each structure is pitched away from the opening, and salt is swept away from the opening.</p>
<p>MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.</p>	<p>X</p>		<p>The City has three permanent, covered structures for salt storage. Liquid deicer solutions are stored in outdoor tanks at each salt storage facility.</p>
<p>Good housekeeping practices must be implemented at the site, including:</p> <ul style="list-style-type: none"> • cleanup of salt at the end of each day or conclusion of a storm event; • tarping of trucks for transportation of bulk chloride; • maintaining the pad and equipment; • good practices during loading and unloading; • cleanup of loading and spreading equipment after each snow/ice event; • a written inspection program for storage facility, structures and work area; • removing surplus materials from the site when winter activity finished where applicable; • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. 	<p>X</p>		<p>The City implements good housekeeping practices:</p> <ul style="list-style-type: none"> • salt is cleaned up at the end of each day or conclusion of a storm event; • trucks are tarped before salt is transported • the City maintains the impervious pads and equipment; • good practices during loading and unloading are performed; • vehicles and equipment are washed outside of the garage after each snow/ice event. The wash waste runs to nearby sanitary sewers. The City would like to create a designated washing area that drains to the sanitary sewer; • the City performs inspections of its facilities, structures, and work areas as a part of its MS4 program; • if the City over purchases salt, the salt will be temporarily stored on an impervious pad and covered with a heavy duty tarp outside of the storage structures; • annual inspection and repairs completed as a part of normal operations; • the City produces its own brine and blends is with organics to use in the prewetting of roads .

Winter Maintenance Operations BMPs

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
Calibrate all salt spreading equipment at least annually before November 30th. Records of the calibration results must be maintained for each piece of spreading equipment.	X		Application rate is calibrated before the start of the winter season on each truck, every year.
Pre-wet road salt before use, either by applying liquids to the salt stockpile, or by applying liquids by way of the spreading equipment as the salt is deposited on the road.	X		The City utilizes five (5) truck-mounted liquid applicators to help prevent the bonding of snow and ice to the road surface prior to an ice and snow event. The City uses a blend of organics, house-made brine, and additional chlorides to pretreat roads prior to snow events. The City uses a spray rack to prewet salt as truck leaves and also has on board wetting on some trucks. All salt is prewetted before application.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	X		The City uses the National Weather Service and Weather Command to track weather forecasts. The City Foreman scans pavements via 10 vehicle mounted permanent sensors to track pavement temperatures and snow melt throughout the City.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	X		The City has a protocol in place that is outlined in the City's Snow Removal Policies and Procedures Manual.
Track and record salt quantity used and storm conditions from each call-out.	X		The City records salt usage for each winter event. The annual salt usage is used to approximate the salt required for the next winter season.
Develop a written plan for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products) beginning with critical locations such as bridges over streams.	X		The City has a protocol in place that is outlined in the City's Snow Removal Policies and Procedures Manual.
Provide employees involved in winter maintenance operations with annual training before November 30th on best management practices in the use	X		Annual winter maintenance training is attended in house. Staff Leaders also attend the annual APWA Snow Conference. The City intends to send staff to annual watershed training.

of road salt in operations, including the practice of plowing first and applying salt only after snow has been cleared.			
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that contractors are properly trained and comply with all applicable BMPs.	X		In an effort to become more efficient, the City may contract out the plowing of cul-de-sacs during snow events over 4 inches. Contractors will make one full pass around the perimeter of the cul-de-sac with the snowplow, pushing the snow to the inside of the cul-de-sac. The cul-de-sacs will be salted and snow will be plowed off the cul-de-sac at a later time by City staff after all other priority streets have been completed.
Complete an annual report, as required by paragraph 3(B) of this order, which is standardized in an electronic format and submitted to the IEPA's website and to the watershed group.		July 1, 2023	Annual report will be completed in 2023.
Obtain and put into place equipment necessary to implement all salt spreading/deicing measure specified in this BMP, such as any new or retrofitted salt spreading equipment necessary to allow for pre-wetting and proper rates of application.	X		The City has the necessary equipment.
MS4/CSO/IDOT/TOLLWAY Only - Install equipment to measure the pavement temperature on the winter maintenance fleet for a sufficient number of vehicles to provide sufficient information to adjust application rates for the most efficient levels. Develop and complete a plan to equip the winter maintenance fleet before the first re-evaluation.	X		The City uses the National Weather Service and Weather Command to track weather forecasts. The City Foreman scans pavements via use of 10 vehicle mounted permanent sensors to track pavement temperatures and snow melt throughout the City.
MS4/CSO/IDOT/TOLLWAY Only - Before the first re-evaluation, develop a method for conducting a post-winter review to identify areas of success and areas in need of improvement. Items to be completed as part of the review must include, but are not limited to, an evaluation of each salt spreader's application rate,	X		The City holds performance review meetings after major snow/ice events. The City plans to hold annual post winter/spring meetings to discuss areas of success and areas in need of improvement.

variations in application rates, and discussion of the variation compared to the recommended rates. Once developed, the review should occur annually in the spring/early summer following each winter season.			
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5.0 Chloride Reduction BMPs for Salt Storage Facilities

As part of the Chloride TLWQS, specific BMPs were identified for Salt Storage Facilities to reduce the chloride impact on the watershed. Implementing these BMPs over 15-year term and evaluating additional BMPs at 5-year intervals, will lead to reduced chloride concentrations in the watersheds. The BMPs identified are outlined below:

Workgroup BMP

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
The permittee must participate in a Chlorides workgroup for the CAWS or LDPR, depending on the watershed within which the facility's discharge is located.	X		The City of Joliet is a member of the Lower Des Plaines Watershed Group and City staff attends workgroup meetings.

Salt Storage and Handling BMPs

Variance BMP	Currently Implementing	Will Implement (Target Year)	Agency Description of Current Implementation
All salt will be stored on an impermeable pad constructed to ensure that minimal stormwater comes into contact with salt.	X		All salt stored by the City is stored in dedicated permanent covered structures on a concrete pad for containment and to prevent contact with stormwater.
Pads will be constructed to direct stormwater away from the salt pile. The permittee must consider directing any drainage that enters the pad to a collection point where feasible.	X		All salt is stored inside permanent structures. The impervious surface is pitched away from the opening of the structure, and salt is swept away from the opening.
Outdoor salt piles not stored under permanent cover must be covered by well-secured tarps at all times except when in active use. While working on the pile, fixed or mobile berms must be incorporated around non-working face to minimize stormwater contact. The permittee must stage tarp when	X		Salt is ordered as needed and stored in the storage structures. If the City over purchases salt, the salt will be temporarily stored on an impervious pad and covered with a tarp outside of the storage structures.

starting final lift and tarp over the edge of the berm/pad where possible.			
<p>Good housekeeping practices must be implemented at the site, including:</p> <ul style="list-style-type: none"> • cleanup of salt at the end of each day or conclusion of a storm event; • tarping of trucks for transportation of bulk chloride; • maintaining the pad and equipment; • good practices during loading and unloading; • cleanup of loading and spreading equipment after each snow/ice event; • a written inspection program for storage facility, structures and work area; • removing surplus materials from the site when winter activity finished where applicable; • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. 	X		<p>The City implements good housekeeping practices:</p> <ul style="list-style-type: none"> • salt is cleaned up at the end of each day or conclusion of a storm event; • trucks are tarped before salt is transported • the City maintains the impervious pads and equipment; • good practices during loading and unloading are performed; • vehicles and equipment are washed outside of the garage after each snow/ice event. The wash waste runs to nearby sanitary sewers. The City would like to create a designated washing area that drains to the sanitary sewer; • the City performs inspections of its facilities, structures, and work areas as a part of its MS4 program; • if the City over purchases salt, the salt will be temporarily stored on an impervious pad and covered with a heavy duty tarp outside of the storage structures; • annual inspection and repairs completed as a part of normal operations; • the City produces its own brine and blends is with organics to use in the prewetting of roads .
Annual training must be conducted for employees responsible for loading/unloading/handling at docks and trucks at the facility.	X		Annual winter maintenance training is attended in house. Staff Leaders also attend the annual APWA Snow Conference. The City intends to send staff to annual watershed training.
An Annual Report must be completed as required by paragraph 3(B) of this order. The report must be standardized in excel, and must be submitted to the IEPA and to the watershed group.		July 1, 2023	Annual report will be completed in 2023.
For working areas, provide berms and or sufficient slope to allow snow melt and stormwater to	X		Storage structures have barrier walls to limit salt from escaping from the structure. Areas around the salt storage

drain away from the area. If snow melt and stormwater cannot be drained away from the working area, channeling water to a collection point such as a sump, holding tank or lined basin for collection, discharge at a later time, use for prewetting, and use for make-up water for brine must be considered.			structures are pitched away from the structure to allow stormwater to drain away to storm and sanitary sewers.
The Permittee must make use of fixed and mobile berms where appropriate to redirect flow and tarp over the edge of the pad where possible to minimize stormwater contact.	X		Storage structures have barrier walls to limit salt from escaping from the structure. Areas around the salt storage structures are pitched away from the structure to allow stormwater to drain away to storm and sanitary sewers.
The Permittee must consider retaining stormwater which contacts the salt from a 25-year/24- hour storm event where feasible. Such retention could be either within the berm or in a separate basin, or the impacted stormwater could be stored and used as pre-wetting brine.	X		Stormwater does not come in contact with stored salt.

6.0 Plan to Implement BMPs

The City of Joliet will implement the following BMPs.

BMP: Complete an annual report, as required by paragraph 3(B) of this order, which is standardized in an electronic format and submitted to the IEPA's website and to the watershed group.

Plan to Implement BMP: The City will complete the annual report as part of the requirements for Year 2 of this variance.

Schedule for Implementation: The annual report will be submitted in 2023.

BMP: Good housekeeping practices must be implemented at the site, including cleanup of loading and spreading equipment after each snow/ice event.

Plan to Implement BMP: The City currently does not have a designated wash bay to wash equipment but has plans to construct a designated area for washing.

Schedule for Implementation: The City will develop a plan to construct a designated wash bay by Dec 1, 2024.

BMP: All salt will be stored on an impermeable pad constructed to ensure that minimal stormwater comes into contact with salt.

Plan to Implement BMP: The City is proposing constructing an additional salt storage facility on the far south side of the City.

Schedule for Implementation: The City will develop a plan to construct an additional salt storage facility by July 1, 2025.

7.0 Other Chloride TLWQS Required Milestones

The City will implement these specific milestones (not included in the above BMPs) as outlined by the Chloride TLWQS.

Milestone	Agency Completion Date	Agency Completion Details
6 MONTHS AFTER EFFECTIVE DATE: Petitioner establishes a mechanism for tracking of de-icing salt usage for each facility.	October, 2023	The City records salt usage for each winter event. The annual salt usage is used to approximate the salt required for the next winter season.
July 1st OF EVERY YEAR (BEGINNING WITH YEAR 2): Discharger must submit an Annual Report for the previous year beginning on May 1 and ending on April 30 of the following year to the Agency and the chlorides workgroup on. The report shall be on salt usage for deicing and steps taken to minimize salt use and makes the report publicly available.	By July 1 of each year, beginning in Year 2 2023.	The City of Joliet will submit an annual report to the workgroup and IEPA.
July 1st of YEAR 3, YEAR 8 and YEAR 13: The chlorides workgroup submits a Status Report to the IEPA which includes an analysis on the following: chlorides monitoring data; report on the chloride workgroup’s outreach strategy, which includes outreach efforts to expand coverage of the TLWQS, and outreach and training for nonpoint sources; identification of any new BMPs, treatment technology or salt alternatives; identification of the impediments and potential solutions of those impediments faced by dischargers and those granted coverage under the TLWQS that prevent them from completing the training and making all capital purchases necessary to implement the required BMPs; and identification and description of any assistance (financial, technical, or otherwise) that the chloride workgroup may be able to provide.	By July 1 of year 3 2024, the workgroups will submit a Status Report to the IEPA.	

<p>July 1st OF YEAR 4 ½: Chlorides workgroup submits to the Board its first proposed re-evaluation pleading consistent with the Board's order granting the TLWQS.</p>	<p>By July 1 of year 4 ½ 2025, the workgroups will submit a re-evaluation to the IEPA and IPCB.</p>	
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Appendix 1 – Snow Removal Policies and Procedures Manual