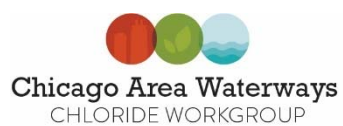


Chloride Pollutant Minimization Plan for City of Palos Heights

November 21, 2022

Prepared by City of Palos Heights



City of Palos Heights is a member of the
Chicago Area Waterways Chloride
Workgroup



1.0 Introduction to Chloride Issue in CAWS/LDPR

This Pollutant Minimization Plan (PMP) has been prepared by City of Palos Heights to reduce the environmental impacts from the organization's chloride related operations. City of Palos Heights 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 Palos Heights		
Facility Name: Public Works	Permit Number: ILG103030	
Facility Address: 7607 W College Drive		
City: Palos Heights	State: Illinois	Zip Code: 60463

The City of Palos Heights is a Municipal Separate Storm Sewer System (MS4) with two outfalls to the Cal Sag Channel. The City maintains 85 lane miles of streets and a salt storage garage with a 1,000 ton capacity.

2.2 Chloride Sources

Chlorine sources at the City's stormwater outfalls predominately originate from winter road maintenance. The City's municipal limits cover an area of approximately four square miles including 85 lane miles of roadways, 300 commercial properties, one community hospital, and zero industrial developments. The City's water utility supplies its residents with Lake Michigan water; therefore, the additional need of salt-based water softening treatment is not needed. The City also stores 1,000 tons of salt for the winter season in a covered building. Salt deliveries are made on solid pavement and cleaned up within hours of delivery.

The City is responsible for winter maintenance of its roads and approximately 30,000 SY of municipal parking lots and access roads. Private snow removal companies maintain commercial properties including educational institutions, places of worship, and the community hospital.

2.3 Level of Service for Winter Maintenance Activities

Most of the local streets maintained by the City of Palos Heights are classified as low volume – low speed local roads with ADT<1000 and 20 MPH speed limit. The following Winter Maintenance Activities were developed for all local roads:

Pavement Temperature	Weather Conditions	Maintenance Actions	Salt (Tons) Prewetted/Pretreated with Brine/Other Blends	Dry Salt
>30°F ↑	Snow	Plow, Treat Intersections Only	80 (40/lane mile)	100
	Frz. Rain	Apply Chemical	80-160	100-200
30°F ↓	Snow	Plow & Apply Chemical	80-160	100-200
	Frz. Rain	Apply Chemical	150-200	180-240
25°F - 30°F ↑	Snow	Plow & Apply Chemical	120-160	150-200
	Frz. Rain	Apply Chemical	150-200	180-240

25°F - 30°F ↓	Snow	Plow & Apply Chemical	120-160	150-200
	Frz. Rain	Apply Chemical	160-240	200-300
20°F - 25°F ↑	Snow	Plow & Apply Chemical	160-240	200-300
	Frz. Rain	Apply Chemical	160-240	200-300
20°F - 25°F ↓	Snow	Plow & Apply Chemical	200-280	250-350
	Frz. Rain	Apply Chemical	240-230	300-400
15°F - 20°F ↑	Snow	Plow & Apply Chemical	200-280	250-350
	Frz. Rain	Apply Chemical	240-320	300-400
15°F - 20°F ↓	Snow	Plow & Apply Chemical	240-320	300-400
	Frz. Rain	Apply Chemical	240-320	300-400
0°F - 15°F ↑↓	Snow	Plow & Apply Chemical Blends	300-400	Not Used
			300-400	Not Used
<0°F	Snow	Plow & Apply Chemical Blends	400-600	Not Used
			400-600	Not Used

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.

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 of Palos Heights are included in the snow and ice plan 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	X		City of Palos Heights has been a member of the Chicago Area Waterways Chloride Workgroup since 2022. The Director of Public Works or the Public Works Foreman

watershed within which the facility's discharge is located.			routinely attend workgroup meetings and participate in workgroup training.
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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 of Palos Heights is stored in a building with a concrete floor to prevent contact with stormwater.
Cover salt piles at all times except when in active use, unless stored indoors.	X		All salt is stored in a covered building.
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.	X		Work area is located directly in front of the salt storage facility. All drains are covered with a leak tight solid cover during operations. The area is swept within hours after salt operations are stopped.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.			
Good housekeeping practices must be implemented at the site, including: <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; 	X		<ul style="list-style-type: none"> During salt loading and unloading operations, all storm manholes are covered with solid lids. All trucks are stored inside the Public Works garage when not in operation. All trucks are washed inside the public works garage with washwater collected in a triple basin. Triple basin is emptied using a Vactor Truck and discharged into a bermed site for drying.

<ul style="list-style-type: none"> • 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. 			<ul style="list-style-type: none"> • All equipment is inspected after each storm event for damages and logged into the City's Asset Management Software. • Salt Storage Facility is inspected yearly with routine repairs completed in a timely manner.
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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		All equipment is calibrated yearly after Thanksgiving when holiday decorations are completed.
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		All road salt trucks are equipped with an on-board pre-wet system.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	X		Due to the size of the City, pavement temperatures are measured hourly by a hand held device and applications rates are dictated by a Public Works Foreman
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	X		Application rates were developed and included in the level of service description.
Track and record salt quantity used and storm conditions from each call-out.	X		Salt and chemical usage is tracked by each operator and summarized after each snow event.
Develop a written plan for implementation of anti-icing,	X		The City does not maintain any bridges, large hills, or other critical areas where

with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products) beginning with critical locations such as bridges over streams.			icing is routinely an issue. City uses mechanical means to maintain all roadways with good success and only applies minimal pre-wetted salt after plowing operations. The low ADT minimizes any compacted snow on roadways and additional anti-icing agents did provide better results.
Provide employees involved in winter maintenance operations with annual training before November 30th on best management practices in the use of road salt in operations, including the practice of plowing first and applying salt only after snow has been cleared.	X		All employees attend annual winter operations training and a training roster is maintained.
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		All winter operations are completed with City Staff.
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.	X		Annual report will be provided to the IEPA at the end of snow season.
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		All road salt trucks are equipped with an on-board pre-wet system.
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.		April 2023	
MS4/CSO/IDOT/TOLLWAY Only - Before the first re-evaluation,		April 2023	

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, 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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Additional BMPs Identified for Agency/Facility

If your agency currently does any other BMPs for chlorides specific to your operations (for industrial members – this may include any BMPs related to chlorides in your processes), list them out in the table below and provide details about how you are currently implementing those BMPs. If you don't use any additional BMPs, feel free to delete this section.

BMP	Currently Implementing	Agency Description of Current Implementation
Brine/Chemical Blend Storage Containment	X	The City constructed a concrete containment wall for all brine/chemical blend liquids
Truck Scales	X	City purchased and maintains truck scales to measure the amount of salt that used on each route with a loader scale as a back-up.
Liquid tanks	X	City calibrated pre-wet chemical tanks to determine the amount of liquid chemical that is used.

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		City of Palos Heights has been a member of the Chicago Area Waterways Chloride Workgroup since 2022. The Director of Public Works or the Public Works Foreman routinely attend workgroup meetings and participate in workgroup training.

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 of Palos Heights is stored in a building with a concrete floor 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		Salt Storage is located at a significantly higher elevations and no stormwater flow is directed toward the facility.
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 starting final lift and tarp over the edge of the berm/pad where possible.	X		No Outdoor salt is stored at this facility.
<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 	X		<ul style="list-style-type: none"> • During salt loading and unloading operations, all storm manholes are covered with solid lids. • All trucks are stored inside the Public Works garage when not in operation. • All trucks are washed inside the public works garage with washwater collected in a triple basin. Triple basin is emptied using a Vactor Truck and discharged into a bermed site for drying. • All equipment is inspected after each storm event for damages and logged into the City's Asset Management Software. <p>Salt Storage Facility is inspected yearly with routine repairs completed in a timely manner.</p>

<p>activity finished where applicable;</p> <ul style="list-style-type: none"> • annual inspection and repairs completed when practical; • evaluate the opportunity to reduce or reuse the wash water. 			
<p>Annual training must be conducted for employees responsible for loading/unloading/handling at docks and trucks at the facility.</p>	X		<p>All employees attend annual winter operations training and a training roster is maintained.</p>
<p>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.</p>	X		<p>Annual report will be provided to the IEPA at the end of snow season.</p>
<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>	X		<p>Work area is located directly in front of the salt storage facility. All drains are covered with a leak tight solid cover during operations. The area is swept within hours after salt operations are stopped.</p>
<p>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.</p>	X		N/A
<p>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.</p>	X		N/A

Additional BMPs Identified for Agency/Facility

If your agency currently does any other BMPs for chlorides specific to your operations, list them out in the table below and provide details about how you are currently implementing those BMPs. If you don't use any additional BMPs, delete this section.

BMP	Currently Implementing	Agency Description of Current Implementation

6.0 Plan to Implement BMPs

The City of Palos Heights will implement the following BMPs to take steps towards compliance with chloride standards for the watershed.

The City of Palos Heights is currently in compliance with the recommended BMPs which includes:

- Participation in a local chloride reduction workgroup
- Maintains a covered salt storage facility
- Utilizes brine/chemical pre-wet system on all road salt trucks
- Utilizes truck scales to measure the amount of salt that is used
- Calibrates it's pre-wet system to determine how much liquid is being used
- Isolates salt storage work area from nearby drains and sweeps all salt within hours of operation
- Due to the small size of the City, only one foreman dictates the application rates based on hourly temperature reading for the entire staff.
- Mechanical means of snow removal take precedence over salt application. Salt is only applied after snow has stopped.
- Each maintenance worker is trained annually with on winter operations.

7.0 Other Chloride TLWQS Required Milestones

The City of Palos Heights will evaluate its winter operations at the end of winter season and determine if other means of salt reductions can be added.