Annual Report for Year 1 (2022-2023) of the Time Limited Water Quality Standard for Chloride

06/16/2023

Prepared by Cook County Department of Transportation and Highways (CCDOTH)

Maintenance Bureau

Chicago Area Waterways
CHLORIDE WORKGROUP

Cook County Department of Transportation and Highways 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 the Cook County Department of Transportation and Highways (DoTH) to reduce the environmental impacts from the organization's chloride related operations. DoTH is a discharger covered under the Time Limited Water Quality Standard for Chloride for the Chicago Area Waterways System (CAWS) and Lower Des Plaines River (LDPR) 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 decrease 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 apply salt 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 (IPCB) 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 Plains 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, Facility Information

The DoTH Maintenance Bureau is comprised of four (4) maintenance facilities housing supervisory staff, highway maintenance labor force and equipment personnel.

2.1 Facility Overviews / Descriptions

Agency Name: Cook County Department of Transportation and Highways		
Facility Name: Maintenance District 1		Permit Number: ILG103060
Facility Address: 2325 N Meacham Rd		
City: Schaumburg	State: Illinois	Zip Code: 60173

The Cook County Department of Transportation and Highways Maintenance District 1 Facility maintains 429 lane miles of highways in the northwest quadrant of suburban Cook County. This facility has a salt storage dome with concrete walls and a concrete pad with capacity for storing 4,000 tons of rock salt. This facility also houses a liquid deicer storage tank with a capacity of 4,000 gallons.

Agency Name: Cook County Department of Transportation and Highways		
Facility Name: Maintenance District 2		Permit Number: ILG103060
Facility Address: 2101 Ballard Rd		
City: Des Plaines	State: Illinois	Zip Code: 60016

The Cook County Department of Transportation and Highways Maintenance District 2 Facility maintains 346 lane miles of highways in the northeast quadrant of suburban Cook County. This facility has a salt storage dome with concrete walls and concrete pad with capacity for storing 5,194 tons of rock salt. This facility also houses a liquid deicer storage tank with a capacity of 5,000 gallons.

Agency Name: Cook County Department of Transportation and Highways		
Facility Name: Maintenance District 4		Permit Number: ILG103060
Facility Address: 8900 W 135th St		
City: Orland Park	State: Illinois	Zip Code: 60462

The Cook County Department of Transportation and Highways Maintenance District 4 Facility maintains 476 lane miles of highways in the southwest quadrant of suburban Cook County. This facility has a salt storage dome with concrete walls and a concrete pad with capacity for storing 5,194 tons of rock salt. This facility also houses a liquid deicer storage tank with a capacity of 5,000 gallons.

Maintenance District 4 also maintains an additional salt storage dome at 901 E. 26th St in La Grange Park, Illinois 60526 with concrete walls and a concrete pad with capacity for storing 800 tons of rock salt and a liquid deicer storage tank with a capacity of 4,000 gallons.

Agency Name: Cook County Department of Transportation and Highways		
Facility Name: Maintenance District 5		Permit Number: ILG103060
Facility Address: 13600 S Ashland Ave		
City: Riverdale	State: Illinois	Zip Code: 60827

The Cook County Department of Transportation and Highways Maintenance District 5 Facility maintains 374 lane miles of highways in the southeast quadrant of suburban Cook County. This facility has a salt storage dome with concrete walls and a concrete pad with capacity for storing 6,483 tons of rock salt. This facility also houses a liquid deicer storage tank with a capacity of 5,000 gallons.

2.2 Level of Service for Winter Maintenance Activities

The Cook County Department of Transportation and Highways' winter maintenance activities consist of snow and ice removal operations, which include clearing road surfaces of snow and ice, edge line to edge line. Crews are also dispatched for complaints of snow drifting situations. For snow and ice control operations, DoTH's objective is to deploy resources to provide the safest winter driving conditions feasible in the most efficient time possible to mitigate the impact winter weather conditions can have on those traveling on the County highway system.

3.0 Best Management Practices

Details regarding DoTH's implementation of the best management practices (BMPs) identified as part of the TLWQS for Chloride are included below.

Workgroup BMP

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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.	DoTH has been a member of the Chicago Area Waterways Chloride Workgroup since 2021. DoTH maintenance and environmental staff attend meetings and trainings arranged by the CAWS.

Salt Storage and Handling BMPs

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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.	DoTH continues to store all salt in five permanent dome structures on concrete pads to prevent contact with stormwater.
Cover salt piles at all times except when in active use, unless stored indoors.	DoTH continues to store all salt in salt domes, does not store any salt outdoors, and is committed to covering salt piles if ever stored outdoors.
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.	Partially Implementing: Salt is currently stored in domes on concrete pads. DoTH has requested a Capital Improvement Project with the Cook County Bureau of Asset Management (BAM) for FY 2024-25 for Districts 4 and 5 to regrade the pavement around the salt storage and loading zones to reduce the amount of stormwater runoff from working areas. In addition, DoTH has engaged with a consultant to assist with preliminary design tasks such as surveying and initial site plan development for all four Districts. DoTH will continue to advance designs for District 1 and 2 for future requests in the Capital Improvement Program.
MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.	DoTH continues to store all salt in five permanent dome structures on a concrete pad to prevent contact with stormwater.
Good housekeeping practices must be implemented at the site, including: • 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;	DoTH continues to use good housekeeping practices for winter road salt related work including loading, salt deliveries, and facility inspections. Details are provided within Section 4.D.II of the attached Snow and Ice Policy.

• 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.	

Winter Maintenance Operations BMPs

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
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.	DoTH and the manufacturer completed all calibration for snow trucks on or before 11/23/22 for the 2022/23 snow and ice season. Records are maintained for each piece of spreading equipment.
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.	DoTH continues to pre-wet salt before dispersion on roads, as noted in Section 4.D.II of the Snow and Ice Policy.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	DoTH continues to utilize information provided by our contract weather forecaster and use equipment to measure pavement temperature on over 24 trucks with truck sensors divided equally between the four maintenance Districts.
Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	DoTH continues to vary application rates and materials based on pavement temperatures and weather conditions consistent with application rates and materials included in Section 4.D.II of the attached Snow and Ice Policy.
Track and record salt quantity used and storm conditions from each call-out.	DoTH continues to track and record salt quantities used and storm conditions for each call-out. Salt usage was tracked after each shift of a snow event for the 2022/23 snow and ice 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.	DoTH has developed guidelines for use of anti-icing products and includes information in Section 4.D.II of the Snow and Ice Policy. DoTH is also working to expand our existing operations to allow for enhanced use of anti-icing materials. DoTH has identified a piggyback contract opportunity and plans to utilize for the implementation of brine mixing stations for all four Districts in 2024. DoTH will also review the snow and ice policy to include abilities for anti-icing by 2025 with the new brine mixing stations.
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.	DoTH completed annual training for winter maintenance staff for the 2022/23 snow and ice season on May 17 and May 20th, 2022. Additional trainings with Supervisors and Managers were completed in September, October, and December on Snow and Ice Operations / implementation of our Chloride Prevention Plan.
Be responsible for complying with all applicable BMPs even when deicing practices are contracted out and ensure that contractors are property trained and comply with all applicable BMPs.	DoTH did not contract any snow and ice operations for the 2022/23 season, but commits to ensuring that future contractors, if any, are properly trained and comply with all applicable BMPs.
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.	DoTH submitted the annual report to IEPA on 06/16/2023 and the workgroup on June 8, 2023 in advance of the July 1 deadline.
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.	DoTH's snow trucks continue to have equipment necessary to allow for pre-wetting and proper rates of application.
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.	DoTH has equipment to measure pavement temperature on a sufficient number of vehicles in our winter maintenance fleet with 24 trucks with truck sensors divided equally between the four maintenance Districts.

Develop and complete a plan to equip the winter maintenance fleet before the first re-evaluation.	
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, 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.	DoTH met with all Snow and Ice Supervisory staff on 5/11/2023 to discuss the 2022/23 season, with a focus on salt spreader's application rate, variations in application rates, and discussion of the variation compared to the recommended rates. DoTH team members will continue to track recommended rates and salt usage for each snow event. DoTH will also implement a protocol to review all rates after each storm event and work with team members as necessary if there are differences. DoTH team members will also focus on topics with team members as reminders leading up to 2023/24 season.

3.1 Analysis of BMPs Implemented

As part of the 2022-23 snow and ice season, DoTH is pleased to report salt usage is down significantly from previous snow seasons as we start to implement the new recommended rates for salt usage per event. For reference, DoTH averaged almost 480 pounds per lane mile driven in the 2020-2021 snow season and saw that metric decrease to 225 pounds per lane mile driven in the 2022-2023 snow season. As DoTH continues to work to implement recommendations, accurate data is a focus, making sure that equipment is providing accurate results and team members are tracking data. DoTH is working on a new solicitation with other County Departments to select a new vendor for our Automated Vehicle Location (AVL) contract which should help with timely collection of accurate data.

3.2 Analysis of Alternative Treatments or New Technology

At this point, DoTH is not pursuing any alternate treatments and is focusing on implementing recommendations within the PMP.

4.0 Deicing/Anti-Icing Agents Used

Material or Product	Dry, Pre-Wet/Pretreated, or Liquid	Lane Miles Treated with the Product	Total Amount Used 2022-2023 (Year 1)	Total Amount Used Over First 5 Year Term
Salt	Pre-Wet	1,620	9,224 tons	9,224 tons for one year
Calcium Chloride	Liquid for pre-wetting	1,620	44,000 gallons (est)	44,000 gallons for one year

4.1 Application Rates

The application rates used by DoTH for the 2022-2023 winter season are attached as Appendix A.

4.1.1 Application Rate Analysis

The application rate table included in Appendix A was developed for the TLWQS based on recommended rates for peer agencies. The 2022-2023 winter season was the first time the recommended rate table was utilized by DoTH. Supervisors monitored the use of salt throughout the season and made adjustments to recalibrate equipment, protocols for salt usage for call outs, and tracking of recommended rates for each call out throughout the season. DoTH saw a significant decrease in the use of salt from previous winter seasons based on the use of the recommended rates and also saw consistency between individual Maintenance Districts improve throughout the 2022-2023 winter season. DoTH will continue to monitor the data from each call out in future winter seasons to look for new opportunities for improvements.

4.2 Application Practices

DoTH uses the following practices to apply deicing and anti-icing materials:

- Anti-icing with brine, calcium chloride, and beet juice for some events.
- Deicing with on board pre-wetting for all events
- Deicing with salt brine, calcium chloride, and beet juice. Mix for salt brine depended on the conditions for each individual event.

DoTH did not use dry salt during the 2022/23 season for any events. This is an improvement over previous snow seasons where some dry salt had been used. DoTH also improved our brine usage for 2022/23 season.

4.3 Call Outs

A total of 27.8 inches of snow was reported for the 2022-2023 winter. There was one frost event, three freezing rain events, and 26 snow events for the 2022-2023 winter where at least

one of the four Maintenance Districts was called out for snow and ice operations. A log of all call outs completed by DoTH are included as Appendix B.

4.4 Use of Liquids

DoTH did not use dry salt during the 2022/23 season for any events. This is an improvement over previous snow seasons where some dry salt had been used. DoTH also increased our usage of liquids in 2022/23 season, using brine comprised of water and calcium chloride.

5.0 Training

DoTH completed annual training for 75 employees out of 85 employees who are part of the winter maintenance operations on 5/17/2022 and 5/20/2022.

Role in Winter Operations	Training Topics Covered
5/17/2022 and 5/20/2022 Plow Drivers Equipment Operators Supervisors Managers	TLWQS Basics Environmental issues and area waterways water quality, how to use the equipment, environmental impacts from salt, anti-icing, application rates, routes, good housekeeping around the salt shed, loading/unloading procedures, DoTH's snow and ice policies, etc.
9/7/2022 Managers	PMP report preparation and overview
10/12/2022 Managers Supervisors	Snow and Ice De-Icing Workshop-Best management Practices (BMP)
10/26/2022 Equipment Supervisor	Snow truck calibration
12/5/2022 Managers Supervisors	Snow and Ice Kick-Off meeting AVL and application rates Good Housekeeping Practices Snow and Ice Summary updates – recommended application rates, pavement temperatures affect

6.0 Deicing and Snow Removal Equipment and Maintenance

DoTH uses the following equipment during winter maintenance activities:

Type of Equipment	Equipment/Vehicle Number	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Liquid	Any Other Important Equipment Information
Snow / Dump Truck	188	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	189	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)

Snow / Dump Truck	190	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	191	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1001	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1002	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1003	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1005	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1006	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1007	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1008	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1009	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1010	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1011	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1012	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1013	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1015	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1016	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)

Snow / Dump Truck	1017	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1018	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1019	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1020	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1021	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1022	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1023	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1024	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1025	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1026	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1027	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1028	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1029	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1030	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1031	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)

Snow / Dump Truck	1032	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1033	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1034	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1035	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1036	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1037	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1038	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1039	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1040	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1041	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1042	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1043	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1044	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane

				Spray Boom for Pretreating
Snow / Dump Truck	1045	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader With 3 lane Spray Boom for Pretreating
Snow / Dump Truck	1046	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1047	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1048	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1049	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1050	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1051	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1052	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1053	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1054	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)
Snow / Dump Truck	1055	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1056	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	V-Box Spreader
Snow / Dump Truck	1057	Computer Controlled	Salt with liquid Pre-Wet added at Spreader	Radial Dump Spreader (RDS)

6.1 Description of Equipment Washing and Wash Water Collection

DoTH uses a product called Neutra-wash, a salt neutralizer, during the washing process. The water from the wash bay is collected in a closed network sanitary sewer system and collected in a triple basin. The triple basin collects solid waste. The solid waste is removed from the triple basins and properly disposed of at an approved USEPA (United States Environmental Protection Agency) environmentally compliant, licensed and permitted waste management facility.

7.0 Material Storage

DoTH maintains five storage area(s). Information regarding the storage area(s) is included in the following table.

Location of Storage Area	Type of Material Stored	Amount of Material Stored	Material stored under permanent cover?	Material stored in a fully enclosed structure?	Material stored on an impervious pad?	Good housekeeping practices followed at storage area? (yes/describe other)
2325 N Meacham Rd	Salt	4,000 Tons	Yes	Yes	Yes	Yes
2325 N Meacham Rd	Liquid Deicer	4,000 gallons	Yes	Yes	Yes	Yes
2101 Ballard Rd	Salt	5,194 Tons	Yes	Yes	Yes	Yes
2101 Ballard Rd	Liquid Deicer	5,000 gallons	Yes	Yes	Yes	Yes
8900 W 135th St	Salt	5,194 Tons	Yes	Yes	Yes	Yes
8900 W 135th St	Liquid Deicer	5,000 gallons	Yes	Yes	Yes	Yes
13600 S Ashland Av	Salt	6,483 Tons	Yes	Yes	Yes	Yes
13600 S Ashland Av	Liquid Deicer	5,000 gallons	Yes	Yes	Yes	Yes
901 E 26th St	Salt	800 tons	Yes	Yes	Yes	Yes
901 E 26th St	Liquid Deicer	2,000 gallons	Yes	Yes	Yes	Yes

8.0 Capital Purchases

DoTH has identified the following capital purchases from our PMP to implement the BMPs and reduce chlorides in our operations over the first 5-year term of the Chloride TLWQS.

Capital Purchase Description	Plan/Schedule for Purchase
Brine Making Stations	Target end of 2023 / beginning of 2024 to provide NTP to contractor to design and install systems at each of the four Districts in 2024.
New Snow Trucks	Requested funding for 8 new trucks for 2024
Salt Storage and Loading Zone Regrading Improvement	DoTH has requested a Capital Improvement Project with the Cook County Bureau of Asset Management (BAM) for FY 2024-25 for Districts 4 and 5 to regrade the pavement around the salt storage and loading zones to reduce the amount of stormwater runoff from working areas. In addition, DoTH has engaged with a consultant to assist with preliminary design tasks such as surveying and initial site plan development for all four Districts. DoTH will continue to advance designs for District 1 and 2 for future requests in the Capital Improvement Program.

8.1 Explanation of Capital Purchases Unable to Be Made According to the Reported Plan

None to report of to date.

9.0 Environmental Monitoring Data

Chloride monitoring data is collected for the CAWS and Lower Des Plaines River watersheds per the IPCB order. The data is maintained by the workgroups. Chloride data for the CAWS is 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.

Chloride monitoring data reports are posted to https://www.cawswatershed.org/reports/ and https://ldpwatersheds.org/about-us/lower-des-plaines-watershed-group/our-work/chloride-tlwqs/.

10.0 Program Evaluation

DoTH is pleased to see progress on the reduction in the use of Chlorides in the 2022-2023 snow season. DoTH focused on ensuring that vehicles were properly calibrated and supervisors were providing recommended salt application rates for each storm. These and other measures listed in the BMPs above resulted in a reduction from almost 480 pounds per lane mile driven in the 2020-2021 snow season to 225 pounds per lane mile driven in the 2022-2023 snow season. DoTH noted a need to continue to expand use of liquids, tracking of information and improvements for housekeeping during and post storms.

10.1 Proposed Steps for the Coming Year

DoTH will continue to look for opportunities to reduce the use of Chlorides for the 2023-2024 snow season.

- DoTH will focus on opportunities to use brine efficiently in the 2023-2024 snow season with the procurement of new brine making stations. Once the brine making stations are in place, DoTH will look to expand pre-treating operations and expand the mix types for use with salt application.
- DoTH is procuring a new AVL system for all vehicles which hopefully will make tracking miles driven and salt used more user friendly. This will provide opportunities to track additional information (use of liquids will be a focus) as well.
- DoTH will focus on improvements for good housekeeping during and post storms (minimize overloading of trucks, sweeping after storm events)
- DoTH will work to update training materials presented to incorporate new areas of focus

11.0 Workgroup Participation

DoTH has been and will continue to remain an active participant for CAWCW workgroup with representation from the Maintenance and Design Bureaus. DoTH is committed to participating in the following activities:

- Attend and participate in quarterly membership meetings via Microsoft Teams
- Participate in Chloride TLWQS Mentoring Sessions
- Send key staff to Winter Deicing Workshops (Annual Training is required for Chloride TLWQS)
- Connect with staff of other member organizations to share ideas on chloride reduction
- Utilize Seasonal Outreach Materials available on the Chlorides in Our Watershed tab of the website and provide input on other outreach needs or formats
- Provide input to workgroup activities
- Submit Annual Report to the workgroup
- Submit completed Pollutant Minimization Plan to the workgroup
- Participate in any CAWCW sponsored surveys related to workgroup activities or projects

APPENDIX A

Please see tables below for recommended anti-icing and deicing application rate guidelines.

Condition	Gallons / Lane Mile		
	$CaCl_2$	Enhanced Salt Brine	Salt Brine
1. Regularly scheduled applications	15 – 25	15 – 30	20 – 40
2. Prior to frost or black ice event	15 – 25	15 – 30	20 – 40
3. Prior to light or moderate snow	15 – 25	15 – 30	20 – 50

Table 1 – Anti-icing Application Rate Guidelines

Pavement Temp (˚F) and Trend (↑↓)	Weather Conditions	Maintenance Actions	Tons / Lane Mile		
			Salt Prewetted/ Pretreated With Salt Brine	Salt Prewetted/ Pretreated With Other Blends	Dry Salt*
>30°↑	Snow	Plow, treat intersections only	80	70	100*
	Freezing Rain	Apply chemical	80 – 160	70 – 140	100 – 200*
30°↓	Snow	Plow & apply chemical	80 – 160	70 – 140	100 – 200*
	Freezing Rain	Apply chemical	150 – 200	130 – 180	180 – 240*
25 – 30˚↑	Snow	Plow & apply chemical	120 – 160	100 – 140	150 – 200*
	Freezing Rain	Apply chemical	150 – 200	130 – 180	180 – 240*
25 – 30˚↓	Snow	Plow & apply chemical	120 – 160	100 – 140	150 – 200*
	Freezing Rain	Apply chemical	160 – 240	140 – 210	200 – 300*
20 – 25˚↑	Snow or Freezing Rain	Plow & apply chemical	160 – 240	140 – 210	200 – 300*
20 - 25˚↓	Snow	Plow & apply chemical	200 – 280	175 – 250	250 – 350*
	Freezing Rain	Apply chemical	240 – 320	210 – 280	300 – 400*
15 - 20˚↑	Snow	Plow & apply chemical	200 – 280	175 – 250	250 – 350*
	Freezing Rain	Apply chemical	240 – 320	210 – 280	300 – 400*
15 - 20˚↓	Snow or Freezing Rain	Plow & apply chemical	240 – 320	210 – 280	300 – 400*
0 - 15˚↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 – 400	Not recommended
<0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 – 600**	Not recommended

Table 2 - Deicing Application Rate Guidelines for single travel lane

* Dry salt is not recommended as it is likely to blow off the road before it melts ice and can only be used with Maintenance Bureau Chief approval

** A blend of 6 – 8 gal/ton $CaCl_2$ added to NaCl can melt ice as low as -10˚.

APPENDIX B

Call Out	Call Out Date	DoTH Districts Dispatched	Quantity of Precipitation	Type of Precipitation	Application Rate Used	Quantity of Salt Used
1	11/15/2022	1,2,4,5	1.4	Snow	535	174
2	11/16/2022	1	0.1	Snow	304	9
3	11/18/2022	1,2,4,5	0.2	Snow	638	98
4	11/19/2022	1,4,5	Trace	Snow	190	78
5	11/28/2022	1	Frost	Frost	433	5
6	12/15-17/2022	1,2,4,5	1.8	Snow	154	138
7	12/22/2022	1,2,4,5	2.4	Snow	221	953
8	12/23-24/2022	1,2,4,5	0.1	Snow	284	984
9	12/26/2022	1,2,4,5	0.2	Snow	314	341
10	1/02/2023	1	Trace	Snow	59	4
11	1/13/2023	1,2,4,5	0.1	Freezing Rain	198	121
12	1/20/2023	1,2,4,5	Trace	Snow	170	104
13	1/22/2023	1,2,4,5	1.5	Snow	184	353
14	1/25-26/2023	1,2,4,5	4	Snow	207	1210
15	1/27/2023	1,2,4,5	0.8	Snow	188	327
16	1/28-29/2023	1,2,4,5	4.3	Snow	279	1087
17	1/29-30/2023	1,2,4,5	0.4	Snow	292	364
18	2/7-8/2023	1,2,4,5	Trace	Snow	128	24
19	2/16-17/2023	1,2,4,5	2.5	Snow	249	1095
20	2/22/2023	1	0.3	Freezing Rain	205	121
21	2/24-25/2023	1,2,4,5	1.4	Snow	195	287
22	3/3/2023	4,5	1.1	Snow	180	115
23	3/5/2023	4	Trace	Snow	146	7
24	3/9-10/2023	1,2,4,5	3.1	Snow	191	507
25	3/11-12/2023	1,2,4,5	0.4	Snow	243	302
26	3/13/2023	1,2,4,5	1	Snow	190	234
27	3/13/2023	1,2,4,5	Trace	Snow	213	114
28	3/18/2023	1,2,4	Trace	Snow	98	21
29	3/25/2023	1	0.3	Snow	278	41
30	4/7/2023	1	0.4	Snow	60	6

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 1 - Deicing/Anti-Icing Agents Used

Material or Product	Dry, Pre-Wet, Pretreated, or Liquid	Lane Miles Treated with the Product for 2022-2023	Parking Lot and Sidewalk Area (Sq. Ft.) Treated with the Product for 2022-2023	Total Amount used for 2022-2023 (Year 1) in Tons or Gallons	Total Amount used for 2023-2024 (Year 2) in Tons or Gallons	Total Amount used for 2023-2024 (Year 3) in Tons or Gallons	Total Amount used for 2023-2024 (Year 4) in Tons or Gallons	Total Amount used for 2023-2024 (Year 5) in Tons or Gallons	Total Amount Used Over First 5-Year Term
Rock Salt	Pre-Wet	1620	100,700	9224 Tons					9224 Tons
Liquid Calcium Chloride used for Pre-Wetting	Liquids	1620	100,700	44,000 Gallons					44000 Gallons
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0
									0

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 1 - Deicing/Anti-Icing Agents Used

Year	Total Lane Miles Maintained	Total Parking Lot and Sidewalk Area (Sq. Ft.) Maintained	Percent of Total Lane Miles Treated with Dry Materials	Percent of Total Lane Miles Treated with Pre-Wet or Pretreated Materials	Percent of Total Lane Miles Treated with Liquids	Percent of Total Parking Lot and Sidewalk Area Treated with Dry	Percent of Total Parking Lot and Sidewalk Area Treated with Pre-wet or Pretreated Materials	Percent of Total Parking Lot and Sidewalk Area Treated with Liquids	
2022-2023	1620	100,700	0%	100%	0%	0%	100%	0%	

Organization Name: Cook County Dept. of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 4 - Annual Training

Role in Winter Operations	Training Topics Covered
Plow Drivers, Equipment Operators	TLWQS Basics, Environmental issues and area waterways water quality, how to use the equipment, environmental impacts from salt, anti-icing, application rates, routes, good housekeeping around the salt shed, loading/unloading procedures, DoTH's snow and ice policies, etc.
Supervisors, Managers	PMP report preparation and overview, Snow and Ice De-Icing Workshop-Best management Practices (BMP), Snow truck calibration , Snow and Ice Kick-Off meeting, AVL and application rates, Good Housekeeping Practices, Snow and Ice Summary updates, recommended application rates, pavement temperatures affect.

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 5 - Equipment

Type of Equipment	Equipment/Vehicle Number	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Pretreated, Liquids)	Other Important Equipment Information
SNOW/DUMP TRUCKS	188	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	189	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	190	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	191	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1001	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1002	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1003	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1005	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1006	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1007	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1008	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1009	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1010	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1011	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1012	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1013	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1015	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1016	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1017	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1018	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1019	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1020	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1021	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1022	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1023	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1024	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1025	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1026	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1027	Computer controlled	Pre-Wet at spreader	RDS Body

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 5 - Equipment

Type of Equipment	Equipment/Vehicle Number	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Pretreated, Liquids)	Other Important Equipment Information
SNOW/DUMP TRUCKS	1028	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1029	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1030	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1031	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1032	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1033	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1034	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1035	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1036	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1037	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1038	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1039	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1040	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1041	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1042	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1043	Computer controlled	Pre-Wet at spreader	RDS
SNOW/DUMP TRUCKS	1044	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1045	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1046	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1047	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1048	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1049	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1050	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1051	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1052	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1053	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1054	Computer controlled	Pre-Wet at spreader	RDS Body
SNOW/DUMP TRUCKS	1055	Computer controlled	Pre-Wet at spreader	V-BOX
SNOW/DUMP TRUCKS	1056	Computer controlled	Pre-Wet at spreader	V-BOX

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 5 - Equipment

Type of Equipment	Equipment/Vehicle Number	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Pretreated, Liquids)	Other Important Equipment Information
SNOW/DUMP TRUCKS	1057	Computer controlled	Pre-Wet at spreader	RDS Body

Organization Name: Cook County Department of Transportation and Highways

Chloride TLWQS Annual Report
Appendix 6 - Material Storage

Location of Storage Area	Material Stored (Rock Salt, Salt Brine, etc.)	Amount of Material Stored 2022-2023	Material stored under permanent cover? (yes/describe other)	Material stored in a fully enclosed structure? (yes/describe other)	Material stored on an impervious pad? (yes/describe other)	Good housekeeping practices followed at storage area? (yes/describe other)
2325 Meacham Rd, Schaumburg, IL 60173	Rock salt	4000 Tons	Yes	Yes	Yes	Yes
2101 Ballard Rd, Des Plaines, IL 60016	Rock salt	5194 Tons	Yes	Yes	Yes	Yes
901 W 26th St, Lagrange Park, IL 60526	Rock salt	800 Tons	Yes	Yes	Yes	Yes
8900 W 135th St, Orland Park, IL 60462	Rock salt	5194 Tons	Yes	Yes	Yes	Yes
13600 S Ashland Ave, Riverdale, IL 60827	Rock salt	6483 Tons	Yes	Yes	Yes	Yes
2325 Meacham Rd, Schaumburg, IL 60173	Liquid Calcium Chloride	4000 Gallons	Yes	Yes	Yes	Yes
2101 Ballard Rd, Des Plaines, IL 60016	Liquid Calcium Chloride	5000 Gallons	Yes	Yes	Yes	Yes
901 W 26th St, Lagrange Park, IL 60526	Liquid Calcium Chloride	2000 Gallons	Yes	Yes	Yes	Yes
8900 W 135th St, Orland Park, IL 60462	Liquid Calcium Chloride	5000 Gallons	Yes	Yes	Yes	Yes
13600 S Ashland Ave, Riverdale, IL 60827	Liquid Calcium Chloride	5000 Gallons	Yes	Yes	Yes	Yes

Organization Name: Cook County Dept. of Transportation and Highways **Chloride TLWQS Annual Report Appendix 7 - Capital Purchases**

Capital Purchase Description	Plan/Schedule for Purchase
Brine Making Stations	Target end of 2023 / beginning of 2024 to provide NTP to contractor to design and install systems at each of the four Districts in 2024.
New Snow Trucks	Requested funding for 8 new trucks for 2024
Salt Storage and Loading Zone Regrading Improvement	DoTH has requested a Capital Improvement Project with the Cook County Bureau of Asset Management (BAM) for FY 2024-25 for Districts 4 and 5 to regrade the pavement around the salt storage and loading zones to contain stormwater runoff from working areas. In addition, DoTH has engaged with a consultant to assist with preliminary design tasks such as surveying and initial site plan development for all four Districts. DoTH will continue to advance designs for District 1 and 2 for future requests in the Capital Improvement Program.