

Annual Report for Year 2 (2023-2024) of the Time Limited Water
Quality Standard for Chloride

05/31/2024

Prepared by INEOS, Joliet LLC



INEOS Joliet, LLC is a member of the
Lower Des Plaines Watershed Group



1.0 Introduction

This Annual Report has been prepared by INEOS, Joliet LLC (INEOS) to report on progress in meeting the requirements for the Time Limited Water Quality Standard for Chloride. INEOS 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 Annual Report has been prepared to meet the requirements laid out in the Time Limited Water Quality Standard (TLWQS) for Chloride.

Chloride 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 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

Agency Name: INEOS Joliet, LLC		
Facility Name: INEOS Joliet, LLC		Permit Number: IL103009
Facility Address: 23425 Amoco Rd		
City: Channahon	State: IL	Zip Code: 60410

The INEOS Joliet facility is located on a 270-acre tract of land located in Channahon, Illinois. The site is approximately 41 miles Southwest of Chicago and approximately one-mile Southeast of the Route 6 and I-55 intersection. To the immediate East and Southeast of the facility is the LDPR. The facility employs approximately 220 employees, who operate, maintain, and manage the facility, which operates 24 hours a day, 7 days a week.

The facility has three process units which manufacture isophthalic acid (IPA), maleic anhydride (MAN), and trimellitic anhydride (TMA). The facility is configured with separate and distinct production units. The facility also has one utilities unit and one wastewater treatment unit. These units supply process air and steam to the process units as well as treat any wastewater from the process units. The facility also has several maintenance shops, office buildings, and warehouses. Water for facility processes is withdrawn from on-site groundwater extraction wells.

2.1 Level of Service for Winter Maintenance Activities

INEOS performs salting activities during the winter months to prevent ice formation on roadways, walking paths, and parking lots. INEOS uses its snowplow trucks to salt roadways and parking lots. Walkways are generally salted by hand or by a mechanical push salt spreader.

3.0 Best Management Practices

Details regarding INEOS 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.	INEOS has been a member of the Lower Des Plaines Watershed Group since 2022. INEOS environmental group actively participates in group meetings.

Salt Storage and Handling BMPs

BMP	Agency Description of Current Implementation or Status Update to the Plan to Implement the BMP
<p>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.</p>	<p>INEOS stores salt in its salt dome located in the Southeast portion of the property. The dome houses bulk salt which is located on a concrete pad and covered from inclement weather by the dome. Bags of salt are stored in this area in a covered shed on a concrete pad and stored inside INEOS' supplies warehouse. During the winter months, INEOS places storage containers of salt near building entrances. These containers have closing lids. INEOS complied with this BMP during the 2023-2024 winter season.</p>
<p>Cover salt piles at all times except when in active use, unless stored indoors.</p>	<p>INEOS stores salt in its salt dome located in the Southeast portion of the property. The dome houses bulk salt which is located on a concrete pad and covered from inclement weather by the dome. Bags of salt are stored in this area in a covered shed on a concrete pad and also stored inside INEOS' supplies warehouse. During the winter months, INEOS places storage containers of salt near building entrance. These containers have closing lids. INEOS complied with this BMP during the 2023-2024 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>	<p>As specified in the INEOS Chloride Pollutant Minimization Plan, INEOS targets to fully implement this plan by 2026; however, INEOS is taking strides to divert stormwater and snow melt away from process and working areas.</p>
<p>MS4/CSO Only - Use deicing material storage structures for all communities covered under General Permit ILR40 for MS4 communities.</p>	<p>Not Applicable</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; 	<p>INEOS developed and maintained a snow removal plan which details housekeeping requirements for snow and ice activities. INEOS complied with the Snow Removal Plan during the 2023-2024 winter season. Snow Removal Salting Plan can be found in Appendix 1.</p>

<ul style="list-style-type: none"> • 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. 	
---	--

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.	All salt spreading equipment was calibrated prior to November 30 th for the 2023-2024 winter season.
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.	As specified in the INEOS Chloride Pollutant Minimization Plan, INEOS will implement this best management strategy by 2026.
Use equipment to measure the pavement temperature unless such equipment has already been installed on road salt spreading vehicles.	INEOS obtained equipment to measure the pavement temperature. The temperature of the pavement is recorded prior to each vehicle road salt spreading event. INEOS complied with this BMP for the 2023-2024 winter season.

Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.	As specified in the INEOS Chloride Pollutant Minimization Plan, INEOS will develop and implement a protocol to vary the salt application rate based on pavement temperature and weather conditions by 2024-2025 season.
Track and record salt quantity used and storm conditions from each call-out.	INEOS is tracking and recording the salt quantity used and storm conditions for each vehicle road salt spreading event. INEOS had one vehicle road salt spreading event for the 2024-2025 season. This can be found in Appendix 2.
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.	As specified in the INEOS Chloride Pollutant Minimization Plan, INEOS will develop and implement an anti-icing program with milestones with an estimate target date of 2026
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.	The facility's Snow Removal Plan has a training check sheet. This training is conducted by the facilities manager for any snow team members. All INEOS employees and contractors involved in winter maintenance operations are up to date with the annual training.
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.	INEOS' employees and contractors complied with all applicable BMPs during the 2023-2024 winter season.
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.	INEOS will implement this BMP as it acquires the necessary equipment.
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	Not Applicable

spreading 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. Develop and complete a plan to equip the winter maintenance fleet before the first re-evaluation.	Not Applicable
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.	Mot Applicable

Additional BMPs Identified for Agency/Facility

BMP	Agency Description of Current Implementation
No additional BMPs identified.	No additional BMPs identified.

3.1 Analysis of BMPs Implemented

Analysis and details of BMPs implementation is listed in Section 3.0 “Best Management Practices”.

3.2 Analysis of Alternative Treatments or New Technology

No alternative treatment or new technologies identified during the 2023-2024 winter season.

4.0 Deicing/Anti-Icing Agents Used

Materials used by INEOS for the 2023-2024 winter season are included below:

Material or Product	Dry, Pre-Wet/Pretreated, or Liquid	Lane Miles Treated with the Product	Parking Lot and Sidewalk Area Treated with Product	Total Amount Used 2023-2024 (Year 1)	Total Amount Used Over First 5 Year Term
MVP TREATED De-Icer	Dry Salt	0 Miles	5,000 ft ²	2,500 pounds	2,500 pounds
MVP Bulk Road Salt	Dry Salt	4 Miles	0 ft ²	10,380 pounds	10,380 pounds

4.1 Application Rates

The application rates during winter callouts for the 2023-2024 winter season are included below:

Type of Equipment	Equipment Identification	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Liquid)	Lane Miles Treated	Total Amount Used for 2023-2024 Season
Snowplow truck w/ salt spreader	2009 Ford 350 Super Duty w/ salt spreader attachment	Mechanical	Dry Salt	4 Miles	10,380 pounds

4.1.1 Application Rate Analysis

INEOS had one winter callout for the 2023-2024 winter season. Approximately, 4 miles of roads were treated, and 10,380 pounds of dry salt were used.

4.2 Application Practices

INEOS application practices are identified in INEOS “Snow Removal Salting Plan (GSPP-027) found in Appendix 1.

4.3 Call Outs

A total of 15.2 inches of snow was reported in Joliet, IL for the 2023-2024 winter. There were 11 freezing rain event(s) and snow event(s) for the 2023-2024 winter. INEOS had 1 of call out(s) completed during the 2023-2024 winter. A log of all call outs completed by INEOS are included as Appendix 2. The 2023-2024 winter weather data can be found in Appendix 2.

4.4 Use of Liquids

INEOS does not use any liquid Deicing/Anti-Icing Agents during the 2023-2024 winter season.

5.0 Training

INEOS completed annual training for all employees out who are part of the winter maintenance operations prior to 2023-2024 winter season. The winter maintenance operators are required to sign-off that training was complete prior to the 2023-2024 winter season. Outline of the training received is cited in the “Snow Removal Salting Plan (GSPP-027)” found in Appendix 1.

6.0 Deicing and Snow Removal Equipment and Maintenance

INEOS Joliet, LLC uses equipment listed below during winter maintenance activities

Type of Equipment	Equipment Identification	Type of Spreader (mechanically controlled, computer controlled, etc.)	Type of Material Used with Equipment (Dry, Pre-Wet, Liquid)	Any Other Important Equipment Information
Snow plow truck w/ salt spreader	2009 Ford 350 Super Duty w/ salt spreader attachment	Mechanical	Dry Salt	None
Snow plow truck	2008 Ford 250 Super Duty	N/A	N/A	None
Six (6) manual salt push spreaders	Westward Broadcast 100-pound capacity	Mechanical	Dry Salt	None

7.0 Description of Equipment Washing and Wash Water Collection

Equipment is washed on an as needed basis. Salt equipment is washed/cleaned on the plant wash pad using plant water. The collected water from the wash pad is routed to INEOS wastewater treatment plant.

8.0 Material Storage

List of all salt storage areas and material storage housekeeping practices can be found in INEOS “Snow Removal Slating Plan (GSPP-027)” found in Appendix 1.

9.0 Capital Purchases

INEOS 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 are included below:

Capital Purchase Description	Plan/Schedule for Purchase
Prewetting Salt Equipment	Planned purchased November 2026

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

No capital purchase unable to be acquired.

10.0 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/>.

10.1 Organization Specific Chloride Monitoring Data

INEOS is not required to collect chloride monitoring data as part of its NPDES requirements.

10.2 Changes to the Facility's NPDES Treatment Technologies for Chloride

No changes were made.

11.0 Program Evaluation

INEOS met all compliance obligation from its Chloride Pollutant Minimization Plan. Prior to the 2023-2024 season.

11.1 Proposed Steps for the Coming Year

As specified in the INEOS Chloride Pollutant Minimization Plan, INEOS will develop and implement a protocol to vary the salt application rate based on pavement temperature and weather conditions by 2024-2025 season.

12.0 Workgroup Participation

INEOS environmental group actively participates in Lower Des Plaines Watershed Group in the following ways

- Attends bi-monthly membership meetings via Zoom
- Shares draft of NPDES permits with IENOS employees
- Participates in Chloride TLWQS Mentoring Sessions
- Sends key staff to Winter Deicing Workshops (required for Chloride TLWQS)
- Utilizes Seasonal Outreach Materials available on the Member tab of the website and provide input on other outreach needs or formats

Appendix 1: Snow Removal Salting Plan (GSPP-027)

SCOPE

This document details snow removal and salting activities to be completed during the winter months. Salting activities done by the snow plow team must comply with INEOS Joliet's Chloride Pollution Minimization Plan.

SALT STORAGE

Bulk salt must be stored in the salt dome near CU-403.

Bags of salt may be stored inside buildings or locations with impermeable ground (i.e. concrete pad) to prevent salt from contaminating the ground.

HOUSEKEEPING PRACTICES

When spreading salt in areas, piles of salt must be avoided. If any piles of salt are created, they must be cleaned up or spread out.

The salt dome must be kept in good condition. Any salt spilled in this area must be cleaned up.

When loading trucks or bin, any salt spills must be cleaned up.

Any residual salt on salt spreading equipment should be cleaned up after use.

The salt storage areas must be inspected annually before winter activities. The inspection should look at the condition of the salt dome, any salt spills that were not cleaned up, and the overall condition of the storage area.

AREAS TO BE PLOWED AND SALTED

Salt spreading routes can be found in **APPENDIX B**.

Snow removal priorities can be found in drawing M0279 which is in **APPENDIX C**.

SNOW PLOW TRAINING REQUIREMENTS

The training checklist for new Snow Plow Team members can be found in **APPENDIX A**.

Training must be completed annually before November 30th of each year.

Training must be updated with any new information from the sites Chloride Pollution Minimization Plan.

APPENDIX A SNOW TEAM TRAINING

- Everyone should be aware of how the system should look when the plow is properly connected.
- Instruct everyone on the correct operation of the plow controls using the hand-held control.
- Make sure that everyone is aware of the correct blade position during normal driving.
- Retracted Vee position blades – caution to be shown when entering driveways or other elevation changes.
- Plowing speed should not exceed 10 mph.
- Always store the plow retracted back.
- When parking, retract the plow and set it down.
- Never make a first pass nearest to your target area. Snow rolls off the side and you will get a mound of snow along the edge even if you are angled completely left or right. For instance, if your first pass in the parking lot is right behind the cars, you can create a large mound that you will not be able to reach to breakdown.
- When pushing snow down and over (left or right-angled blade, such as in parking lots, you should only try to push about 70% or less of the width of the snow plow. The deeper the snow gets, the less you should push. Otherwise, you will lose snow off the side and must come back to clean up the lines you left.
- When plowing forward, you should drop the plow and continue to hold down for a few seconds till the red light comes on. This is the “float” mode. This means that the plow is “free floating” and will stay on the ground no matter how the road goes up and down.
- There are a few good examples of when it is useful to not set the plow to float mode. For instance, your terrain is gravel and you do not want to scrape up the gravel with the snow, you can drop the plow, tap the up button for a second to raise it an inch or so. Another often used technique is to tap the “up” on the remote just before pushing snow over a decline. This way, you can push snow down to a low area, but the plow will not follow the slope. It will remain at the same height.
- Never push snow right up to a fence. Start your piles several feet away. You can then stack the snow taller as you go back. This will prevent unnecessary fence repairs come spring.
- To stack snow, when you are about to push into an existing pile, hold down the “up” button. The plow will rise with the pile and stack snow higher. Then when you back off the pile, the plow will already be in the raised position.
- Always be aware of where you are creating your snow piles. Do not make them where you are creating limited visibility for drivers trying to leave parking lots or entering street intersections.
- Explain the process and have them try the back plowing or dragging process.
- Take pictures of areas that have congestion, prior to snow fall and we will include the pictures in the plow book for reference.
- Discuss plowing priorities.
- Drive in each section and review the snow removal strategy for that area and mark any relevant concerns.
- Stress that speed is not a concern – safety is our primary concern. Go slow and take your time.
- Make sure they are aware that any contact with anything or damage must be reported to shift manager.

- Discuss the pre-drive inspection checklist.
- Discuss plow operation on the garage truck and the plow operation on the salt truck as well as the operation of the salt spreader.
- Cover cleanup of salt spills in storage areas or anywhere else in the plant.

Training Provided By: _____

Training Participant: _____

Date: _____

Printed Copy is Uncontrolled. Print a new copy each time a hard copy is required.

APPENDIX B SALT SPREADING ROUTES

Area	Location	Type	Shovel	Scoops	Salt broke apart	Done	Comments
West Gate	West Gate Turnstile	yellow drum	1	1			
West Gate	At the top of the contractor walkway before RR tracks	large yellow bin w black top	2	1			
West Gate	West gate truck driver entrance	yellow drum	1	1			
Rescar	Rescar area	2 yellow drums	2	2			
Admin	Small bin to be put behind the security truck	Small yellow w/ black top	1	1			
Admin	Outside security office	large yellow bin w black top	2	1			
Admin	Admin west parking lot entrance	yellow drum	1	1			
Admin	Admin south parking lot entrance by smoking area	yellow drum	1	1			
Admin	Admin east parking lot entrance	yellow drum	1	1			
Admin west lot	Admin west lot	Truck salt spreader					
Admin east lot	Admin east lot	Truck salt spreader					
Admin sidewalks	Admin sidewalks to west gate lot	salt spreader					
Medical	Employee center medical bldg. ramp	yellow drum	1	1			

Area	Location	Type	Shovel	Scoops	Salt broke apart	Done	Comments
Lab	By the front entrance to the lab	yellow drum	1	1			
Lab	By the east side entrance to the lab	yellow drum	1	1			
Fire barn	In front of garage doors on the fire barn	2 yellow drums	2	2			
Learning Center	In front of main entrance	yellow drum	1	1			
IT bldg.	IT in front of building by parking lot	yellow drum	1	1			
IT bldg.	IT back entrance by chiller	yellow drum	1	1			
Main Shop	Main shop bullpen door	yellow drum	1	1			
Main Shop	Main shop supervisor's door	large yellow bin w black top	1	1			
Main Shop	Main shop TA conference room door	yellow drum	1	1			
Vehicle garage	In front of main garage door and entry door	yellow drum	1	1			
Plant Office	Plant office south door with ramp	yellow drum	1	1			
Plant Office	Plant office classroom door	yellow drum	1	1			
Plant Office	Plant office west door to roadway	yellow drum	1	1			
Plant Office	Plant office east door to parking area	yellow drum	1	1			

Area	Location	Type	Shovel	Scoops	Salt broke apart	Done	Comments
Starcon main shop	Outside main office entrance	yellow drum	1	1			
Starcon main shop	In front of main garage door	large yellow bin w black top	1	1			
Starcon main shop	By the entrance to the laborer's breakroom	yellow drum	1	1			
Meade Shop	By rear entrance to shop	yellow drum	1	1			
Equipment garage	In front of main garage doors	large yellow bin w black top	2	1			
RC1 Field	RC1 field house	2 yellow drums Red Salt Spreader	2	2			
RC2 Field	RC2 field house	large yellow bin w black top Red Salt Spreader	1	1			
OX Old control room	Ox old control room	yellow drum	1	1			
TMA Old control room	TMA old control room	yellow drum	1	1			
PIAO Old control room	PIAP old control room	yellow drum	1	1			
MAN old control room	Outside MAN unit old control room - SPECIAL SALT	yellow drum	1	1			
Supplies warehouse	Outside stores warehouse by driveway	large yellow bin w black top	2	2			
Supplies warehouse	Front entry door stores warehouse	yellow drum	1	1			

Area	Location	Type	Shovel	Scoops	Salt broke apart	Done	Comments
Smoking Area	Next to garbage can inside barriers	Small yellow w/ black top	1	1			
Warehouse 1	North side of warehouse 1 by dock doors	large yellow bin w black top	2	1			
Warehouse 1	East side of warehouse 1 by service entrance	yellow drum	1	1			
Warehouse 1	Under F-707 truck/ rail car loading area	yellow drum	1	1			
Warehouse 1	Under HF-1210 silo transfer area	yellow drum	1	1			
Warehouse 1	Outside KP-109 re-run building	yellow drum	1	1			
Warehouse 2	Outside door for truck drivers	yellow drum	1	1			
Warehouse 2	Outside man door on east side of warehouse	yellow drum	1	1			
Utilities	Outside door to control room	large yellow bin w black top	2	1			
Utilities	Outside door to garage by belt press	yellow drum	1	1			
Dock	At the Dock inside tool room	gray container with wheels	2	1			

APPENDIX C SNOW REMOVAL PRIORITY



SUMMARY OF CHANGES

Step/Section	Reason for Change
	(Changed) - Revision 0: New document Revision 1: Convert into SmartProcedure

Printed Copy is Uncontrolled. Print a new copy each time a hard copy is required.

Appendix 2: 2023-2024 Winter Callouts and Weather Data

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - April 2024

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-04-01	59	38	48.5	4.5	16	0	1.67	0.0	0
2024-04-02	50	43	46.5	2.1	18	0	0.34	0.0	0
2024-04-03	60	34	47.0	2.2	18	0	0.10	0.0	0
2024-04-04	38	33	35.5	-9.6	29	0	0.11	0.0	0
2024-04-05	45	37	41.0	-4.5	24	0	0.20	0.0	0
2024-04-06	43	32	37.5	-8.4	27	0	0.00	0.0	0
2024-04-07	60	30	45.0	-1.2	20	0	0.00	0.0	0
2024-04-08	52	43	47.5	0.9	17	0	0.50	0.0	0
2024-04-09	72	43	57.5	10.5	7	0	0.00	0.0	0
2024-04-10	62	42	52.0	4.6	13	0	0.00	0.0	0
2024-04-11	68	41	54.5	6.8	10	0	T	0.0	0
2024-04-12	59	47	53.0	4.9	12	0	0.01	0.0	0
2024-04-13	63	41	52.0	3.5	13	0	0.00	0.0	0
2024-04-14	71	41	56.0	7.1	9	0	0.00	0.0	0
2024-04-15	82	39	60.5	11.3	4	0	0.00	0.0	0
2024-04-16	75	51	63.0	13.4	2	0	0.00	0.0	0
2024-04-17	79	55	67.0	17.0	0	2	0.00	0.0	0
2024-04-18	69	45	57.0	6.6	8	0	0.00	0.0	0
2024-04-19	63	39	51.0	0.3	14	0	0.16	0.0	0
2024-04-20	57	34	45.5	-5.6	19	0	0.00	0.0	0
2024-04-21	46	30	38.0	-13.5	27	0	0.00	0.0	0
2024-04-22	57	30	43.5	-8.3	21	0	0.00	0.0	0
2024-04-23	65	37	51.0	-1.2	14	0	0.00	0.0	0
2024-04-24	65	26	45.5	-7.1	19	0	0.00	0.0	0
2024-04-25	50	33	41.5	-11.4	23	0	0.00	0.0	0
2024-04-26	61	34	47.5	-5.8	17	0	0.00	0.0	0
2024-04-27	63	34	48.5	-5.1	16	0	0.55	0.0	0
2024-04-28	75	60	67.5	13.5	0	3	0.75	0.0	0
2024-04-29	74	59	66.5	12.2	0	2	0.15	0.0	0
2024-04-30	70	47	58.5	3.8	6	0	0.10	0.0	0
Sum	1853	1198	-	-	423	7	4.64	0.0	-
Average	61.8	39.9	50.9	1.5	-	-	-	-	0.0
Normal	59.9	38.9	49.4	-	473	5	3.93	0.1	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - November 2023

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2023-11-01	41	26	33.5	-13.1	31	0	0.00	0.0	0
2023-11-02	41	23	32.0	-14.2	33	0	0.00	0.0	0
2023-11-03	54	31	42.5	-3.3	22	0	0.00	0.0	0
2023-11-04	58	30	44.0	-1.3	21	0	0.00	0.0	0
2023-11-05	59	35	47.0	2.1	18	0	0.00	0.0	0
2023-11-06	61	36	48.5	4.0	16	0	0.00	0.0	0
2023-11-07	68	45	56.5	12.5	8	0	0.00	0.0	0
2023-11-08	55	49	52.0	8.4	13	0	0.00	0.0	0
2023-11-09	63	40	51.5	8.3	13	0	0.00	0.0	0
2023-11-10	56	36	46.0	3.3	19	0	0.00	0.0	0
2023-11-11	46	28	37.0	-5.3	28	0	0.00	0.0	0
2023-11-12	51	28	39.5	-2.4	25	0	0.00	0.0	0
2023-11-13	58	34	46.0	4.6	19	0	0.00	0.0	0
2023-11-14	61	30	45.5	4.5	19	0	0.00	0.0	0
2023-11-15	62	26	44.0	3.4	21	0	0.00	0.0	0
2023-11-16	67	36	51.5	11.4	13	0	0.00	0.0	0
2023-11-17	65	41	53.0	13.3	12	0	T	0.0	0
2023-11-18	56	28	42.0	2.7	23	0	0.00	0.0	0
2023-11-19	52	27	39.5	0.7	25	0	0.00	0.0	0
2023-11-20	58	31	44.5	6.1	20	0	0.00	0.0	0
2023-11-21	57	30	43.5	5.5	21	0	0.60	0.0	0
2023-11-22	43	33	38.0	0.4	27	0	0.00	0.0	0
2023-11-23	57	21	39.0	1.8	26	0	0.00	0.0	0
2023-11-24	57	21	39.0	2.2	26	0	0.00	0.0	0
2023-11-25	34	27	30.5	-5.9	34	0	0.00	0.0	0
2023-11-26	38	29	33.5	-2.5	31	0	0.00	0.0	0
2023-11-27	33	24	28.5	-7.1	36	0	0.10	1.5	1
2023-11-28	25	15	20.0	-15.2	45	0	0.00	0.0	0
2023-11-29	25	17	21.0	-13.8	44	0	0.00	0.0	0
2023-11-30	45	24	34.5	0.1	30	0	0.00	0.0	0
Sum	1546	901	-	-	719	0	0.70	1.5	-
Average	51.5	30.0	40.8	0.4	-	-	-	-	0.0
Normal	48.5	32.3	40.4	-	738	0	2.46	0.3	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - December 2023

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2023-12-01	51	34	42.5	8.5	22	0	0.33	0.0	0
2023-12-02	43	37	40.0	6.3	25	0	0.30	0.0	0
2023-12-03	44	38	41.0	7.7	24	0	0.30	0.0	0
2023-12-04	40	36	38.0	5.1	27	0	T	0.0	0
2023-12-06	39	30	34.5	2.2	30	0	0.00	0.0	0
2023-12-07	40	30	35.0	3.1	30	0	0.00	0.0	0
2023-12-08	52	35	43.5	11.9	21	0	0.00	0.0	0
2023-12-09	56	35	45.5	14.2	19	0	0.06	0.0	0
2023-12-10	54	32	43.0	12.0	22	0	0.00	0.0	0
2023-12-11	33	27	30.0	-0.6	35	0	0.00	0.0	0
2023-12-12	37	19	28.0	-2.3	37	0	0.00	0.0	0
2023-12-13	37	22	29.5	-0.5	35	0	0.00	0.0	0
2023-12-14	41	11	26.0	-3.7	39	0	0.00	0.0	0
2023-12-15	51	25	38.0	8.5	27	0	0.00	0.0	0
2023-12-16	54	31	42.5	13.3	22	0	0.00	0.0	0
2023-12-17	43	38	40.5	11.6	24	0	0.60	0.0	0
2023-12-19	34	16	25.0	-3.4	40	0	0.00	0.0	0
2023-12-20	33	16	24.5	-3.6	40	0	0.00	0.0	0
2023-12-21	44	28	36.0	8.2	29	0	0.00	0.0	0
2023-12-22	46	37	41.5	13.9	23	0	0.10	0.0	0
2023-12-23	45	42	43.5	16.1	21	0	0.60	0.0	0
2023-12-24	51	44	47.5	20.4	17	0	0.00	0.0	0
2023-12-25	54	48	51.0	24.1	14	0	0.00	0.0	0
2023-12-26	57	39	48.0	21.3	17	0	0.35	0.0	0
2023-12-27	39	28	33.5	7.1	31	0	0.00	0.0	0
2023-12-28	44	31	37.5	11.3	27	0	0.00	0.0	0
2023-12-29	39	36	37.5	11.5	27	0	0.02	0.0	0
2023-12-30	41	28	34.5	8.7	30	0	0.00	0.0	0
2023-12-18	42	33	37.5	8.9	27	0	T	T	T
2023-12-31	39	28	33.5	7.9	31	0	T	T	0
2023-12-05	41	33	37.0	4.4	28	0	0.05	0.3	T
Sum	1364	967	-	-	841	0	2.71	0.3	-
Average	44.0	31.2	37.6	8.2	-	-	-	-	0.0
Normal	36.4	22.4	29.4	-	1104	0	1.94	3.2	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - January 2024

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-01-01	39	28	33.5	8.1	31	0	0.00	0.0	0
2024-01-02	33	28	30.5	5.3	34	0	0.00	0.0	0
2024-01-03	40	26	33.0	8.0	32	0	0.00	0.0	0
2024-01-04	35	26	30.5	5.6	34	0	0.00	0.0	0
2024-01-05	36	26	31.0	6.3	34	0	0.00	0.0	0
2024-01-06	36	25	30.5	6.0	34	0	0.23	2.0	2
2024-01-07	33	30	31.5	7.1	33	0	0.12	1.0	3
2024-01-08	33	30	31.5	7.3	33	0	T	T	2
2024-01-09	37	27	32.0	7.9	33	0	0.50	1.8	3
2024-01-10	37	27	32.0	8.0	33	0	0.50	0.7	3
2024-01-11	35	29	32.0	8.2	33	0	0.00	0.0	2
2024-01-12	33	28	30.5	6.8	34	0	0.20	3.7	5
2024-01-13	38	22	30.0	6.4	35	0	0.05	2.3	6
2024-01-14	37	-10	13.5	-10.0	51	0	0.04	0.2	6
2024-01-15	-9	-11	-10.0	-33.5	75	0	0.00	0.0	5
2024-01-16	0	-11	-5.5	-28.9	70	0	0.00	0.0	5
2024-01-17	6	-11	-2.5	-25.8	67	0	0.00	0.0	5
2024-01-18	21	6	13.5	-9.8	51	0	0.00	0.0	5
2024-01-19	29	8	18.5	-4.8	46	0	0.25	1.5	6
2024-01-20	29	-4	12.5	-10.7	52	0	0.00	0.0	6
2024-01-21	28	-1	13.5	-9.7	51	0	0.00	0.0	5
2024-01-22	25	0	12.5	-10.7	52	0	0.00	0.0	5
2024-01-23	34	24	29.0	5.7	36	0	0.40	0.0	4
2024-01-24	36	32	34.0	10.7	31	0	0.00	0.0	3
2024-01-25	39	34	36.5	13.2	28	0	0.23	0.0	1
2024-01-26	41	36	38.5	15.1	26	0	0.40	0.0	T
2024-01-27	40	34	37.0	13.5	28	0	0.05	0.0	0
2024-01-28	40	34	37.0	13.4	28	0	0.00	0.0	0
2024-01-29	39	30	34.5	10.8	30	0	0.00	0.0	0
2024-01-30	38	27	32.5	8.7	32	0	0.10	0.0	0
2024-01-31	40	27	33.5	9.6	31	0	0.00	0.0	0
Sum	978	596	-	-	1218	0	3.07	13.2	-
Average	31.5	19.2	25.4	1.5	-	-	-	-	2.6
Normal	31.1	16.6	23.9	-	1276	0	1.99	5.0	-

**Observations for each day cover the 24 hours ending
at the time given below (Local Standard Time).**

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - February 2024

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-02-01	39	33	36.0	11.9	29	0	0.00	0.0	0
2024-02-02	52	33	42.5	18.3	22	0	0.00	0.0	0
2024-02-03	44	29	36.5	12.1	28	0	0.00	0.0	0
2024-02-04	44	29	36.5	11.9	28	0	0.00	0.0	0
2024-02-05	49	29	39.0	14.2	26	0	0.00	0.0	0
2024-02-06	49	29	39.0	14.0	26	0	0.00	0.0	0
2024-02-07	38	30	34.0	8.8	31	0	0.00	0.0	0
2024-02-08	48	31	39.5	14.0	25	0	0.00	0.0	0
2024-02-09	57	40	48.5	22.8	16	0	0.50	0.0	0
2024-02-10	57	31	44.0	18.0	21	0	0.00	0.0	0
2024-02-11	41	28	34.5	8.2	30	0	0.00	0.0	0
2024-02-12	40	23	31.5	4.9	33	0	0.00	0.0	0
2024-02-13	45	28	36.5	9.6	28	0	0.00	0.0	0
2024-02-14	41	26	33.5	6.3	31	0	0.00	0.0	0
2024-02-15	46	26	36.0	8.5	29	0	0.02	0.0	0
2024-02-16	44	28	36.0	8.2	29	0	0.00	0.0	0
2024-02-17	30	10	20.0	-8.1	45	0	0.00	0.0	0
2024-02-18	26	12	19.0	-9.5	46	0	0.00	0.0	0
2024-02-19	45	23	34.0	5.2	31	0	0.00	0.0	0
2024-02-20	50	22	36.0	6.8	29	0	0.00	0.0	0
2024-02-21	56	29	42.5	13.0	22	0	0.00	0.0	0
2024-02-22	62	40	51.0	21.1	14	0	0.05	0.0	0
2024-02-23	61	33	47.0	16.8	18	0	0.00	0.0	0
2024-02-25	M	22	M	M	M	M	0.00	0.0	0
2024-02-26	61	27	44.0	12.7	21	0	0.00	0.0	0
2024-02-27	71	37	54.0	22.3	11	0	0.00	0.0	0
2024-02-28	70	28	49.0	16.9	16	0	0.00	0.0	0
2024-02-29	31	18	24.5	-7.8	40	0	0.00	0.0	0
2024-02-24	61	21	41.0	10.4	24	0	0.05	0.2	0
Sum	1358	795	-	-	749	0	0.62	0.2	-
Average	48.5	27.4	38.1	10.5	-	-	-	-	0.0
Normal	35.4	19.8	27.6	-	1047	0	1.78	6.2	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - March 2024

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-03-01	45	18	31.5	-1.0	33	0	0.00	0.0	0
2024-03-02	46	28	37.0	4.1	28	0	0.00	0.0	0
2024-03-03	60	32	46.0	12.8	19	0	0.00	0.0	0
2024-03-04	72	42	57.0	23.4	8	0	0.00	0.0	0
2024-03-05	72	42	57.0	23.0	8	0	1.40	0.0	0
2024-03-06	46	38	42.0	7.6	23	0	T	0.0	0
2024-03-07	51	36	43.5	8.7	21	0	0.00	0.0	0
2024-03-08	51	36	43.5	8.4	21	0	0.02	0.0	0
2024-03-09	51	36	43.5	8.0	21	0	0.03	0.0	0
2024-03-10	45	30	37.5	1.6	27	0	0.00	0.0	0
2024-03-11	46	29	37.5	1.2	27	0	0.00	0.0	0
2024-03-12	66	23	44.5	7.9	20	0	0.00	0.0	0
2024-03-13	70	45	57.5	20.5	7	0	0.00	0.0	0
2024-03-14	69	44	56.5	19.1	8	0	0.05	0.0	0
2024-03-15	67	39	53.0	15.2	12	0	0.00	0.0	0
2024-03-16	67	38	52.5	14.4	12	0	0.00	0.0	0
2024-03-17	48	34	41.0	2.5	24	0	0.00	0.0	0
2024-03-18	40	24	32.0	-6.9	33	0	0.00	0.0	0
2024-03-19	37	25	31.0	-8.2	34	0	0.00	0.0	0
2024-03-20	59	29	44.0	4.4	21	0	0.00	0.0	0
2024-03-21	40	26	33.0	-7.0	32	0	0.00	0.0	0
2024-03-22	44	26	35.0	-5.3	30	0	0.05	T	0
2024-03-23	40	26	33.0	-7.7	32	0	0.15	0.0	0
2024-03-24	41	31	36.0	-5.1	29	0	0.00	0.0	0
2024-03-25	50	31	40.5	-0.9	24	0	0.00	0.0	0
2024-03-26	62	47	54.5	12.7	10	0	0.05	0.0	0
2024-03-27	55	30	42.5	0.3	22	0	0.02	0.0	0
2024-03-28	44	28	36.0	-6.5	29	0	0.00	0.0	0
2024-03-29	52	31	41.5	-1.4	23	0	0.00	0.0	0
2024-03-30	59	31	45.0	1.7	20	0	0.70	0.0	0
2024-03-31	62	38	50.0	6.4	15	0	0.00	0.0	0
Sum	1657	1013	-	-	673	0	2.47	T	-
Average	53.5	32.7	43.1	5.0	-	-	-	-	0.0
Normal	47.0	29.2	38.1	-	835	1	2.27	2.1	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am

Climatological Data for JOLIET BRANDON ROAD LOCK/DAM, IL - April 2024

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2024-04-01	59	38	48.5	4.5	16	0	1.67	0.0	0
2024-04-02	50	43	46.5	2.1	18	0	0.34	0.0	0
2024-04-03	60	34	47.0	2.2	18	0	0.10	0.0	0
2024-04-04	38	33	35.5	-9.6	29	0	0.11	0.0	0
2024-04-05	45	37	41.0	-4.5	24	0	0.20	0.0	0
2024-04-06	43	32	37.5	-8.4	27	0	0.00	0.0	0
2024-04-07	60	30	45.0	-1.2	20	0	0.00	0.0	0
2024-04-08	52	43	47.5	0.9	17	0	0.50	0.0	0
2024-04-09	72	43	57.5	10.5	7	0	0.00	0.0	0
2024-04-10	62	42	52.0	4.6	13	0	0.00	0.0	0
2024-04-11	68	41	54.5	6.8	10	0	T	0.0	0
2024-04-12	59	47	53.0	4.9	12	0	0.01	0.0	0
2024-04-13	63	41	52.0	3.5	13	0	0.00	0.0	0
2024-04-14	71	41	56.0	7.1	9	0	0.00	0.0	0
2024-04-15	82	39	60.5	11.3	4	0	0.00	0.0	0
2024-04-16	75	51	63.0	13.4	2	0	0.00	0.0	0
2024-04-17	79	55	67.0	17.0	0	2	0.00	0.0	0
2024-04-18	69	45	57.0	6.6	8	0	0.00	0.0	0
2024-04-19	63	39	51.0	0.3	14	0	0.16	0.0	0
2024-04-20	57	34	45.5	-5.6	19	0	0.00	0.0	0
2024-04-21	46	30	38.0	-13.5	27	0	0.00	0.0	0
2024-04-22	57	30	43.5	-8.3	21	0	0.00	0.0	0
2024-04-23	65	37	51.0	-1.2	14	0	0.00	0.0	0
2024-04-24	65	26	45.5	-7.1	19	0	0.00	0.0	0
2024-04-25	50	33	41.5	-11.4	23	0	0.00	0.0	0
2024-04-26	61	34	47.5	-5.8	17	0	0.00	0.0	0
2024-04-27	63	34	48.5	-5.1	16	0	0.55	0.0	0
2024-04-28	75	60	67.5	13.5	0	3	0.75	0.0	0
2024-04-29	74	59	66.5	12.2	0	2	0.15	0.0	0
2024-04-30	70	47	58.5	3.8	6	0	0.10	0.0	0
Sum	1853	1198	-	-	423	7	4.64	0.0	-
Average	61.8	39.9	50.9	1.5	-	-	-	-	0.0
Normal	59.9	38.9	49.4	-	473	5	3.93	0.1	-

Observations for each day cover the 24 hours ending at the time given below (Local Standard Time).

Max Temperature : 6am

Min Temperature : 6am

Precipitation : 6am

Snowfall : unknown

Snow Depth : 6am