

MEMORANDUM



TO: JEFFREY HERCZEG, DIRECTOR OF PUBLIC WORKS
FROM: MATT WIKTOROWSKI, FIELD OPERATIONS SR. MANAGER
SUBJECT: FY 2022-2023 WINTER ROAD MAINTENANCE REVIEW
DATE: JUNE 15, 2023

Mayor and Council –

FYI, review of our Winter Maintenance activities this past year

- Victor

This memorandum reports winter maintenance performance data for the 2022/2023 winter season. The data is compared to previous seasons and supported by factors that posed challenges or conversely enhanced service, such as abnormal weather and equipment advancements, respectively.

Background and Winter Road Maintenance Results

Southeast Michigan experienced a mild 2022-2023 winter season, responding to only 20 events, at an average temperature of 32 degrees, with approximately 33" of total snow accumulation (historical 15-year average is 34 events, 31 degrees, and 49" of snow). The mild conditions contributed to another effective winter road maintenance season.

The exact total of measurable snow received of 32.75 inches was slightly more than the previous three-year average of 31.8 inches. This season, neighborhoods were cleared more often to remove hardpack snow/ice, which is often associated with wet snow and warmer temperatures indicative of the recent winter weather patterns.

Sustained improvements in service are attributed to efficiency obtained through the continued investment in new equipment and advances in material application technology. Regularly clearing major roadways before rush hour and expeditious completion of neighborhoods continue to be the benchmarks for the Novi DPW Winter Maintenance program.

The attached table shows this season's data compared to records obtained from the previous 15 winter seasons. Each of these performance measures is discussed in detail below:

Citizen Feedback

DPW received a total of 146 concerns from citizens relating to winter maintenance compared to the previous 15-year average of 193. This seasons concerns, when broken down, are as follows:

- 6 Driveway Plowed In
- 70 Lawn Damage

- 14 Mailbox Hit
- 4 Not Close Enough to Curb
- 2 Not Close Enough to Mailbox
- 30 Road Missed
- 6 Sidewalk Plowed In
- 14 General Concern

Many of the complaints registered were lawn damage (70). This higher-than-normal number of sod repairs is a direct result of warm winter dotted with a couple large snow events that prohibited drivers from easily seeing the edge of the roadway. Corrective action was immediately taken to address complaints relating to the few cases in which plowing was not totally completed. In addition, all lawn repairs reported prior to May 1, have been completed. Overall, in 2022-2023, the department averaged 7.30 citizen concerns per event.

Traffic Crashes

The Novi Police Department provided data that officers responded to 50 crashes this past winter, where snow and ice were listed as being on the road surface. Although there is no data to support if the roadway condition was the sole contributing factor to any accident, tracking roadway condition provides a benchmark for service and safety. Historically, Public Safety crews have responded to an average of 91 events over the past 15 seasons.

Salt Use and Liquids Use

DPW is continually looking for new ways to reduce the amount of salt used for melting snow and ice from City-maintained roadways and parking lots. Limiting the amount of salt not only saves on operating expenditures, but also reduces the number of chlorides entering our watersheds and infrastructure. Over the 2022-2023 winter season, DPW crews applied approximately 4,202 tons of salt or \$228,622 of material, at an average of 210 tons, or \$11,340 per event; compared to the 15-year average of 181 tons per event.

This season, the Department applied only 19,654 gallons of liquid, or an average of 983 gallons per event. The limited amount of brine used was due to part shortages delaying automated brine making system use. The maker will be fully functional for the 2023-2024 winter season.

Labor Costs

Labor costs can vary significantly from season to season given the time and frequency of events. If most storms occur in the middle of the night, or on weekends, the labor cost will be high. Conversely, if most storms happen close to a regularly scheduled shift the cost will be lower because less overtime is needed. Since several of this season's events occurred on holidays or weekends, the total labor cost for the 2022-2023 season was \$179,314, or \$8,966 per event, compared to overall seasonal averages of \$227,409 and

\$6,619 respectively. This season only one event required contractual assistance to augment services.



DPW Snow Team

Additional 2022-2023 Winter Weather Impacts and Expenditures

Novi was hit with a pair of major winter storms beginning with 0.25 - 0.5" of freezing rain on February 22, followed by 9" of heavy, wet snowfall on March 3; both of which caused significant tree damage.

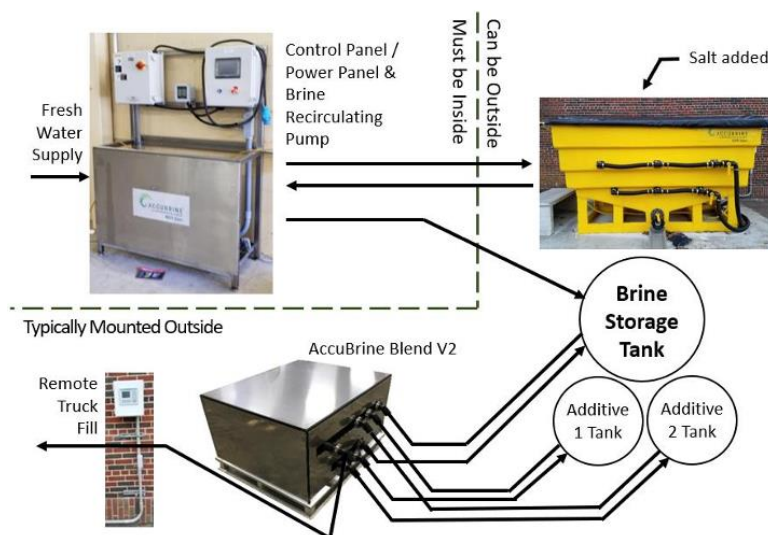
Crews from three contractors and City staff began chipping debris. All crews worked overtime on most weekdays and several weekends. Additionally, GFL dispatched 58 trucks to assist with a final sweep of the city to pick up any remaining debris in front of residences on April 1. The storm clean-up costs totaled approximately \$411,000 due to icy and heavy wet snow produced by the storms.



Storm Damage and Debris Clean-up

Conclusion

DPW continues to increase the efficiency of materials, labor, and equipment used in winter road maintenance. This season, two technologies were explored to streamline reporting processes for operators and managers. The first leverages material usage reports contained in our AVL system. Operators should no longer need to report on route completion, material used (salt or brine), or the length of time equipment was used. The second is an automated brine making system (pictured below) that eliminates the need for an operator to spend time making deicing liquid(s). This machine senses when liquid levels are low and automatically makes up to 6,000 gallons per hour of perfectly blended brine. In addition, each truck is registered in the machine's computer, allowing managers to closely track the type of liquid use for each event and throughout the winter.



Automated Brine Making System

Just as in previous years, the data gleaned from the 2022/2023 winter season will be used to assist decision-making and improve operating procedures for future winter storm events.