

REPORT TO COUNCIL

MEETING DATE: July 14th, 2026
FROM: Alex Hackenbrook, Public Works Manager
SUBJECT: Calcium Application – Level of Service

RECCOMENDATION:

That Council receives this report as information & for discussion purposes when considering to increase the application rate of calcium chloride on designated high traffic gravel roads as part of the Township's dust control program.

BACKGROUND INFORMATION:

Council requested staff provide a report on the level of service for calcium application within the Township due to a complaint at the June 9, 2026.

The Municipality maintains 69.4km of gravel roads that experience varying levels of traffic throughout the year. Several roads have experienced a significant increase in vehicle traffic due to residential development, agricultural activity, commercial operations & seasonal tourism. The current AADT is from the 2014 study.

Dust suppression has traditionally been achieved through the annual application of calcium chloride, which is applied as a single pass down the centre of the roadway, apart from Development Road which received edge to edge calcium application. While the current application program has provided acceptable results on lower-volume roads an increase in the Leve of Service for calcium application, based upon AADT (Average Annual Daily Traffic) shows that select roads are within the "Moderate" to "High Volume" classification. As previous records state for calcium application, it has only ever been done with a single pass, not edge to edge.

During periods of hot/dry weather, excess rainfall & high traffic volumes, it quickly reduces the effectiveness of the calcium chloride treatment, resulting in excessive dust, loose gravel & increased maintenance requirements such as grading.

Increasing the application rate of calcium chloride on selected high traffic roads will provide several benefits, including:

- Improved dust suppression throughout the season
- Enhanced visibility for motorists, cyclists, pedestrians & nearby residents
- Improved driving conditions by helping retain moisture within the road surface
- Reduced loss of fine gravel material caused by dusting

- Lower grading frequency & reduced maintenance costs over time
- Improved protection of residential properties & vehicles from excessive dust

Public Works staff recommend that if a Service Level increase is required, that the application be limited to designated high traffic gravel roads where traffic volumes justify the additional expense. Lower traffic roads would continue to receive the standard application rate.

Reports pulled for information on gravel roadways within the township show varying AADT (Average Annual Daily Traffic) numbers. Municipalities & engineers typically rely on AADT data when determining maintenance standards, dust control, surface treatment or whether paving should be considered. A guideline for AADT rates can be found below:

AADT (vehicles/day)	General Classification
Under 100	Very low volume
100–250	Low volume
250–400	Moderate volume
400–750	High volume for a gravel road
750–1,000	Very high volume; surface treatment often justified
Over 1,000	Generally considered a candidate for paving, depending on truck traffic & economics

For rural municipalities (Bonfield):

- **300–500 AADT** – Busy gravel road requiring frequent grading and dust suppression.
- **500–750 AADT** – Generally considered a high-traffic gravel road.
- **750+ AADT** – Many municipalities begin evaluating hard-surfacing due to maintenance costs, safety, dust complaints, and loss of gravel.

If the road also carries a significant percentage of heavy trucks (e.g., aggregate, logging, or industrial traffic), the threshold for considering paving is often lower because truck loading has a disproportionate effect on gravel deterioration.

The Transportation Association of Canada (TAC) consider roads under the 200 AADT to be low-volume roads, while 400 AADT is the determined threshold where gravel maintenance becomes increasingly costly & surface treatment or paving should be evaluated.

Below are the AADT rates for gravel roads (rating of 100 or greater) within the Municipality from the Roads Needs Study:

ROAD NAME	AADT (vehicles/day)
GRAND DESERT	100
GUAY	100
JAMES	100
MAPLE	100
PINE LAKE	125
TALON LAKE	150
DEVELOPMENT (LAKE SIDE)	150
LINE 3 SOUTH	150
MCNUTT	150
SOUTH SHORE	150
SCHAYER	350
SHIELDS POINT	350
DEVELOPMENT ROAD	650

FINANCIAL IMPLICATIONS:

Increasing the calcium chloride application rate will result in additional annual operating costs associated with the purchase & application of the product. However, these increased costs are expected to be partially offset through:

- Reduced grading frequency
- Lower gravel replacement requirements
- Reduced maintenance labour & equipment operating costs
- Improved longevity of the gravel road surface

Currently, Public Works has a \$60,000 budget for calcium application. In 2026, the department has used \$63,567.11 on contracted calcium application. This includes a single pass of all gravel roadways, excluding Farmers Line which is scheduled to receive a Quarry A gravel lift at the end of July & the Hamlet of Bonfield which will both be done in house using calcium that is currently available at the shop.

The cost breakdown of the contracted calcium application can be found below:

- Cost per litre - \$0.435
- Cost per load - \$12,180, approximately 13km per load (@ spray rate of 3)
- 2026 Budget - \$60,000
- 2026 Actual - \$63,567.11; 5 loads total in 2026
- Price per km - \$937

With the ongoing gravel application program using Quarry A material, other high traffic roadways such as Maple Rd have been treated with a single pass of calcium & have held moisture adequately reducing dust. This is believed to be because of the Quarry A gravel that was applied to the roadway in 2024 & presently being used. As the gravel maintenance program continues with the use of Quarry A gravel, it is forecasted that an edge-to-edge application of calcium will not be needed for all roads.

CONCLUSION:

The Township's AADT confirms, based on best engineering practices, that Development Road is currently the highest travelled gravel road requiring attention. Council has already committed to resurfacing the road & in 2026 calcium was applied edge to edge. Development Road is a connecting link road to other communities & pits & quarries that has heavy truck traffic. Other moderate traffic volume gravel roads are Schayer & Shield's Point Road at 350 AADT. The TAC suggests best practice is to consider high traffic roads at 400 AADT & further consideration for road upgrades after 750 AADT. Therefore, the information does not suggest an increase in service levels.

However, should Council consider increasing the service level for the application of calcium chloride it will improve public safety, reduce dust complaints, enhance driving conditions & help preserve the gravel road surface.

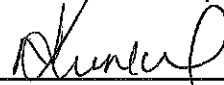
However, staff recommend that the Public Works department use traffic counters during the 2027 season to obtain accurate & up to date traffic count data for all roads within the Township of Bonfield. This data will help play a key role in future project decisions & help to officially determine the highest traffic roadways in Bonfield.

Respectfully,



Alex Hackenbrook
Public Works Manager

I concur with this report,



Nicky Kunkel
CAO, Clerk Treasurer