SIMA 28TH ANNUAL SNOW & ICE SYMPOSIUM

How Do I Reduce Chlorides with Tracking Technology

6/19/2025 - Craig Sandmann

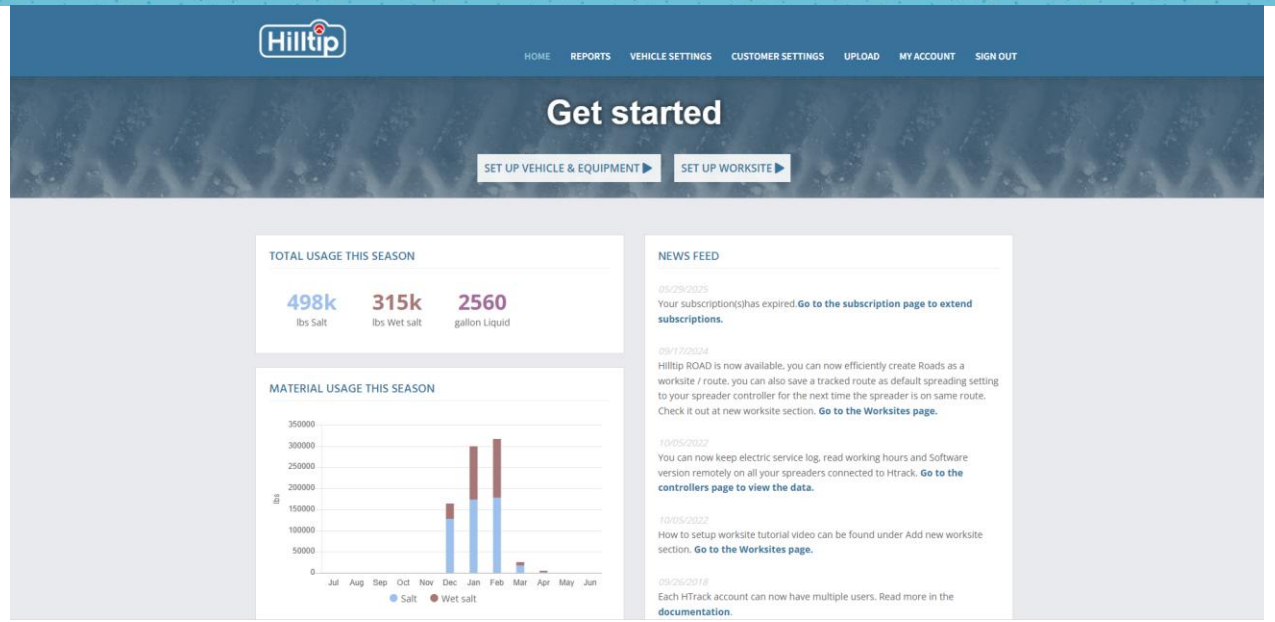
TRACKING 101…

Two primary elements comprise a tracking system…

1. CONTROL INTERFACE

- Records application data/environmental metrics through an encoder.
- Returns position and speed through GPS antenna.
- Transmits data via cellular or Wi-Fi connection.

2. ONLINE USER INTERFACE



- Receives data from controller and stores to server for reporting.
- Allows for the creation of worksites, customers, contracts.

- Geofencing determines property size.
- Spreading settings determine the amount of material needed on a site.
- GPRS capability allows remote control from user interface to machine.

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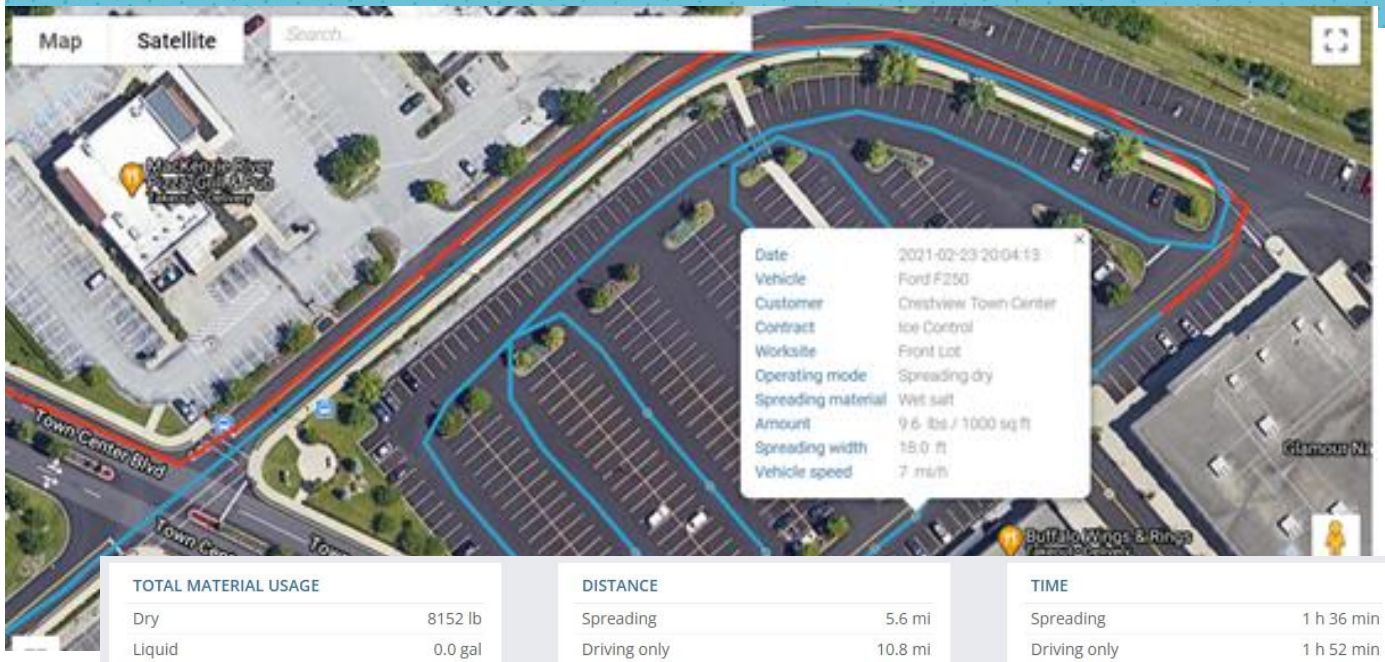


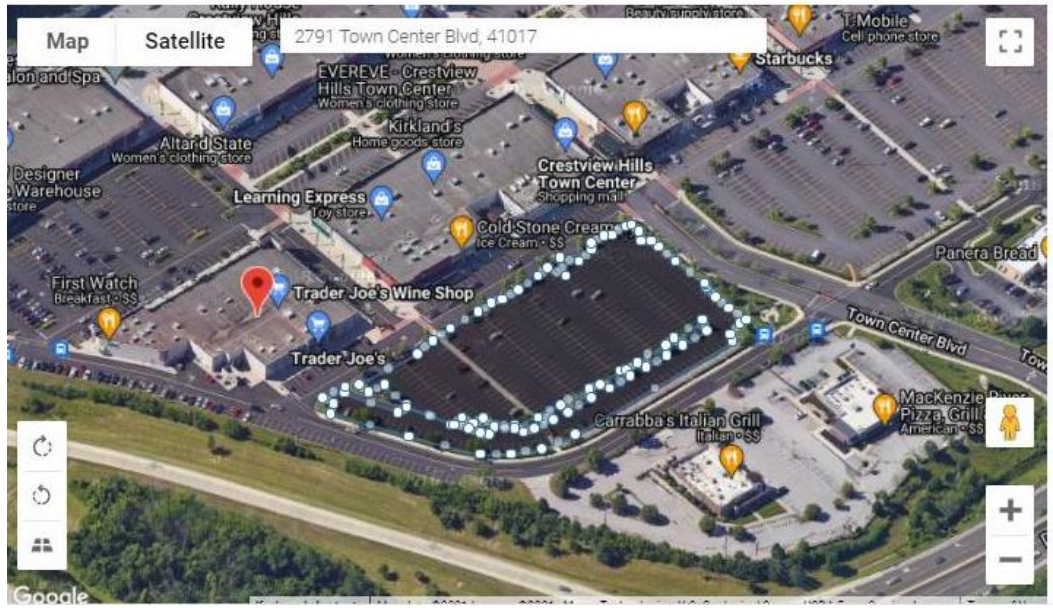
Done | Remove

10,800 sq yd

Salt: 583 lbs
Wet salt: 292 lbs
Sand: 486 lbs
Liquid: 389 gal
Gravel: 194 lbs
Mix: 0 lbs
Custom: 486 lbs
Liquid 2: 0 gal

Map controls

- Click on the map where you want to create your worksite area
- Drag anywhere inside the polygon to move it
- Drag a corner point on the polygon to resize it
- Drag a point on the side of the polygon to create a new corner point
- Right click on a corner point on the polygon to delete it



TOTAL MATERIAL USAGE	
Dry	8152 lb
Liquid	0.0 gal

DISTANCE	
Spreading	5.6 mi
Driving only	10.8 mi
Total	16.4 mi

TIME	
Spreading	1 h 36 min
Driving only	1 h 52 min
Total	3 h 28 min

EFFICIENCY	
Distance eff.	34 %
Time eff.	46 %

AVERAGE SPEED	
Spreading	4 mi/h
Driving only	6 mi/h

AVERAGE APPLICATION RATE	
Dry	10.1 lbs / 1000 sq ft
Liquid	-

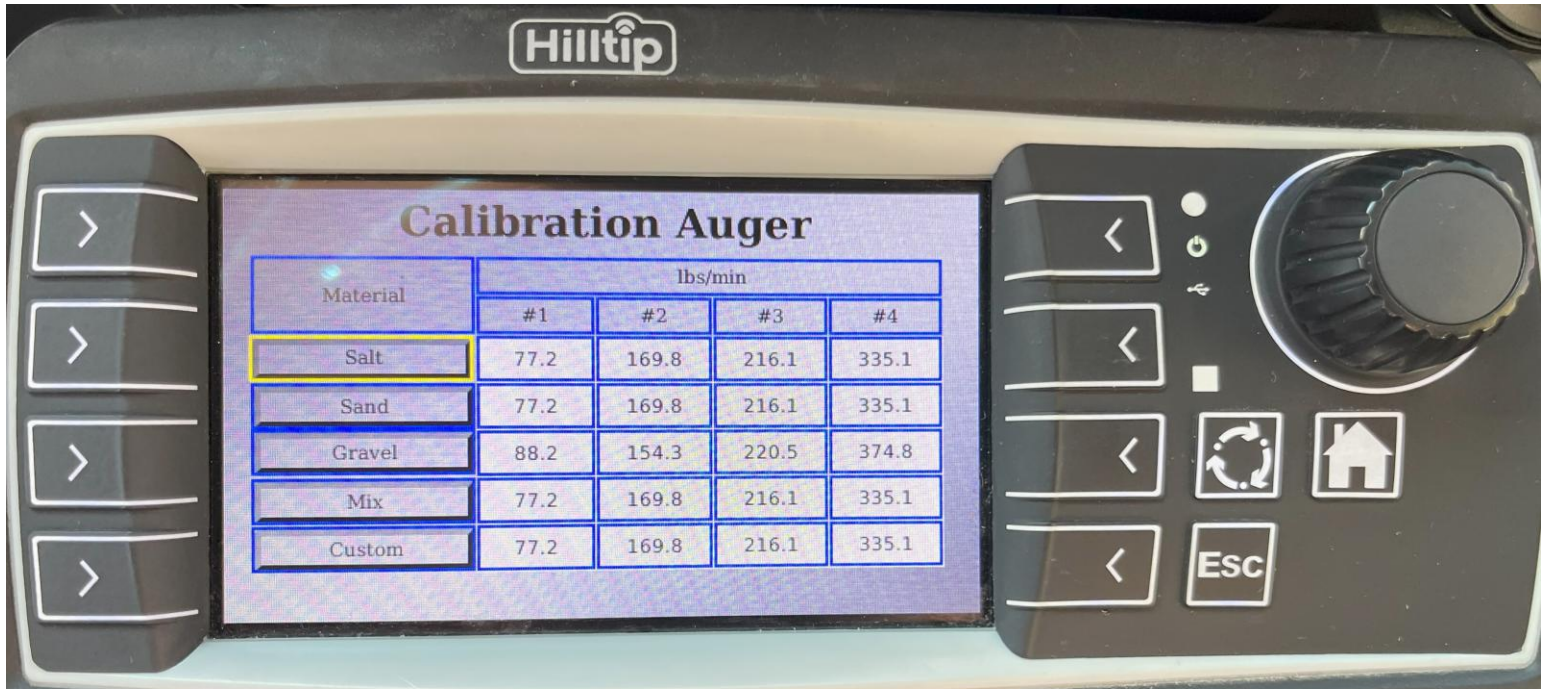
FIRST TIMESTAMP	
Tracking	03/07/2025 05:22:32
Spreading	03/07/2025 05:31:39

LAST TIMESTAMP	
Tracking	04/08/2025 06:42:19
Spreading	04/08/2025 06:41:53

AVERAGE TEMPERATURE	
Road temperature	
Air temperature	
Humidity	

Reducing Chlorides…

Step 1: CALIBRATION



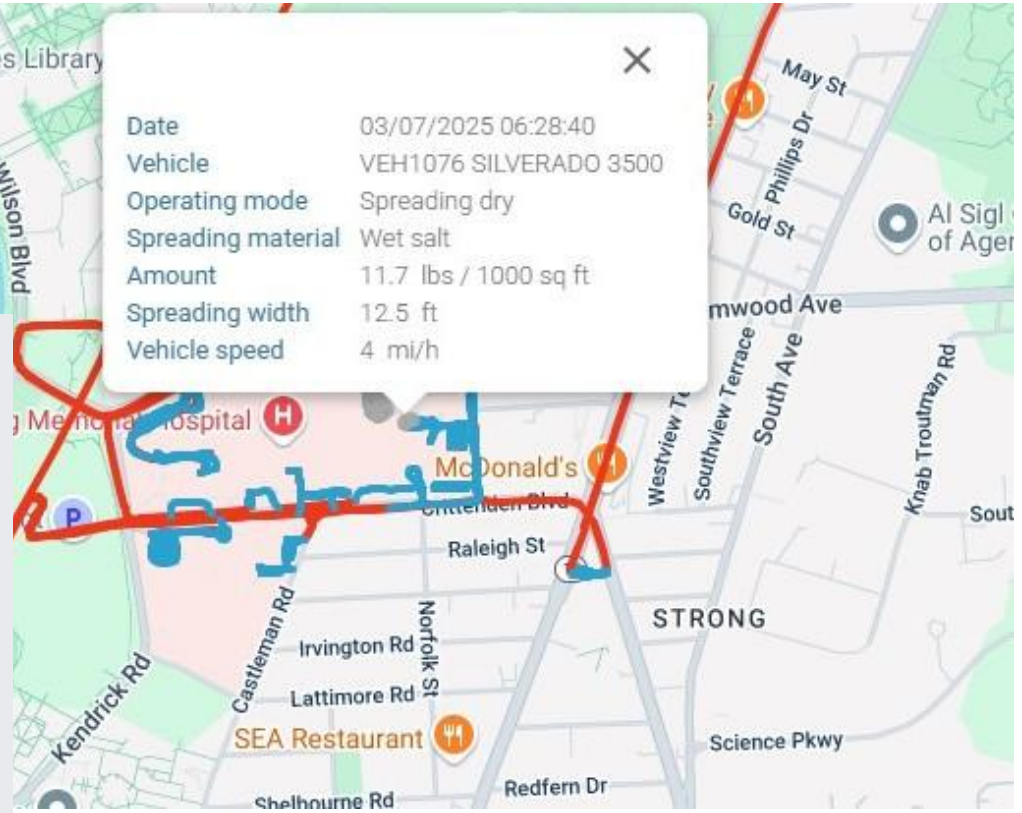
Understand what your equipment in capable of..

- Calibrate the auger/chain at 4 position settings to establish volume.
- Calibrate spinner at 4 position settings to establish distance.
- Calibrate liquid pumps using density of liquid being sprayed.

Step 2: ASSESS THE SITUATION

- How large of an area am I trying to treat for a customer?
- What are their expectations of my company (*clear lot? Zero tolerance?,etc.)?*
- What materials am I using to accomplish the treatment?
- Are you using liquids as part of the treatment plan?
- What efficacies do these materials have and at what temperatures?
- How much material do I typically apply at this site (estimate)?
- What piece of equipment do I plan on using to accomplish the job?

Step 3: KNOW… WHAT YOU DON'T KNOW



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Road temperature
Air temperature
Humidity

- Begin by assigning an application rate to a site.

  For example, 6 lbs/1000 sq ft with a 10% pre-wetting percentage

- Treat this site with that rate 2-3 times to establish the average on material usage and time for the site.
- Always check the site to ensure that the rate selected is doing the job and refer to the user interface to document the amounts used.
- Once you have established your base line, start adjusting the application rate down (while increasing pre-wetting %)

  For example, 5 lbs/1000 sq ft with a 12% pre-wetting percentage

- ***Repeat the process….***

-Check the site to ensure the rate selected is working.
-Refer to user interface to document the amount used.
-Continue to adjust the application rate down (and pre-wet % up).

- Once you establish the lowest rate for treating the site, use this as your new baseline for all applications.
- The user interface will document the progression of the reduction of materials used on any given site.

Step 4: APPLY WHAT YOU'VE LEARNED

START
03/03/2025 12:00:00 AM

END
03/07/2025 11:59:59 PM

TYPE
- All
- Vehicle
- Customer
- Contract
- Worksite

OPERATING MODE
- Include dumping

CALCULATIONS
- Average application rate

SEARCH

DATE	VEHICLE	SPREADER	REGION	AMOUNT	LIQUID AMOUNT	TIME	DISTANCE		AVERAGE APPLICATION RATE
03/03/2025	UTV7	IceStriker 500		-	-	0 h 30 min	2.4 mi	-	-
				146 lb Salt	-	0 h 4 min	0.0 mi		
03/06/2025	VEH2159 KUBOTA UTV	IceStriker 500		-	-	1 h 26 min	8.8 mi	-	7.5 lbs / 1000 sq ft
				736 lb Salt	-	0 h 22 min	1.0 mi		
03/07/2025	VEH1076 SILVERADO 3500	IceStriker 2000AM		-	-	0 h 59 min	7.1 mi	-	10.1 lbs / 1000 sq ft
				3224 lb Wet salt	-	1 h 5 min	5.8 mi		
	VEH2111 KUBOTA UTV	IceStriker 380-SS		-	-	1 h 50 min	5.5 mi	-	15.6 lbs / 1000 sq ft
				835 lb Salt	-	0 h 27 min	1.6 mi		
	VEH2159 KUBOTA UTV	IceStriker 500		-	-	2 h 1 min	13.4 mi	-	13.4 lbs / 1000 sq ft
				1864 lb Salt	-	1 h 6 min	5.1 mi		
	VEH2143 KUBOTA UTV	IceStriker 380-SS		-	-	0 h 29 min	3.2 mi	-	7.8 lbs / 1000 sq ft
				590 lb Salt	-	0 h 20 min	1.6 mi		
	UTV5	IceStriker 500		-	-	2 h 29 min	8.0 mi	-	9.6 lbs / 1000 sq ft
				974 lb Salt	-	0 h 34 min	3.9 mi		
	UTV7	IceStriker 500		-	-	0 h 6 min	0.7 mi	-	17.6 lbs / 1000 sq ft
				118 lb Salt	-	0 h 6 min	0.4 mi		

- Duplicate the calibration procedure for all machines in the fleet regardless of the make.
- Refer to the user interface to get an average (week/month/season) of the material used, vehicle speed and time on any given site.
- Adjust the settings for auger/chain and spinner on all machines to achieve the correct application rate.
- Advise operators of the optimal speed and time allocation for each site.

- Refer to user interface if any modifications were necessary (application rate, different material, etc.) and apply changes as needed.

- Analyze the data…look for trends that can optimize efficiency.

  For example, treating a site after 9 P.M. less passes can be made with a higher spread width.

- Continue to educate yourself on different materials and incorporate them into your operation. Rely on the user interface to document their usage.

IN CONCLUSION…

1. Reducing chlorides begins with adopting technology.
2. Calibrate your equipment so you know what it can do.
3. Use the technology to guide you in your understanding of what you are really doing and how it is working.
4. Be disciplined in improving your goal of reductions by analyzing the data it provides.

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THANK YOU FOR YOUR ATTENDANCE!

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