

# Winter Weather Solution

Technical Solution developed by  
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10/10/2025

# North Texas Tollway Authority

- Political subdivision of Texas
- Only build what the region asks us to build
- Customer driven
- Not funded by taxes



# NTTA System



**360**  
Tollway



**LLTB**  
Toll Bridge



**AATT**  
Airport Toll  
Tunnel



**CTP**  
Chisholm Trail  
Parkway



**DNT**  
Dallas North  
Tollway



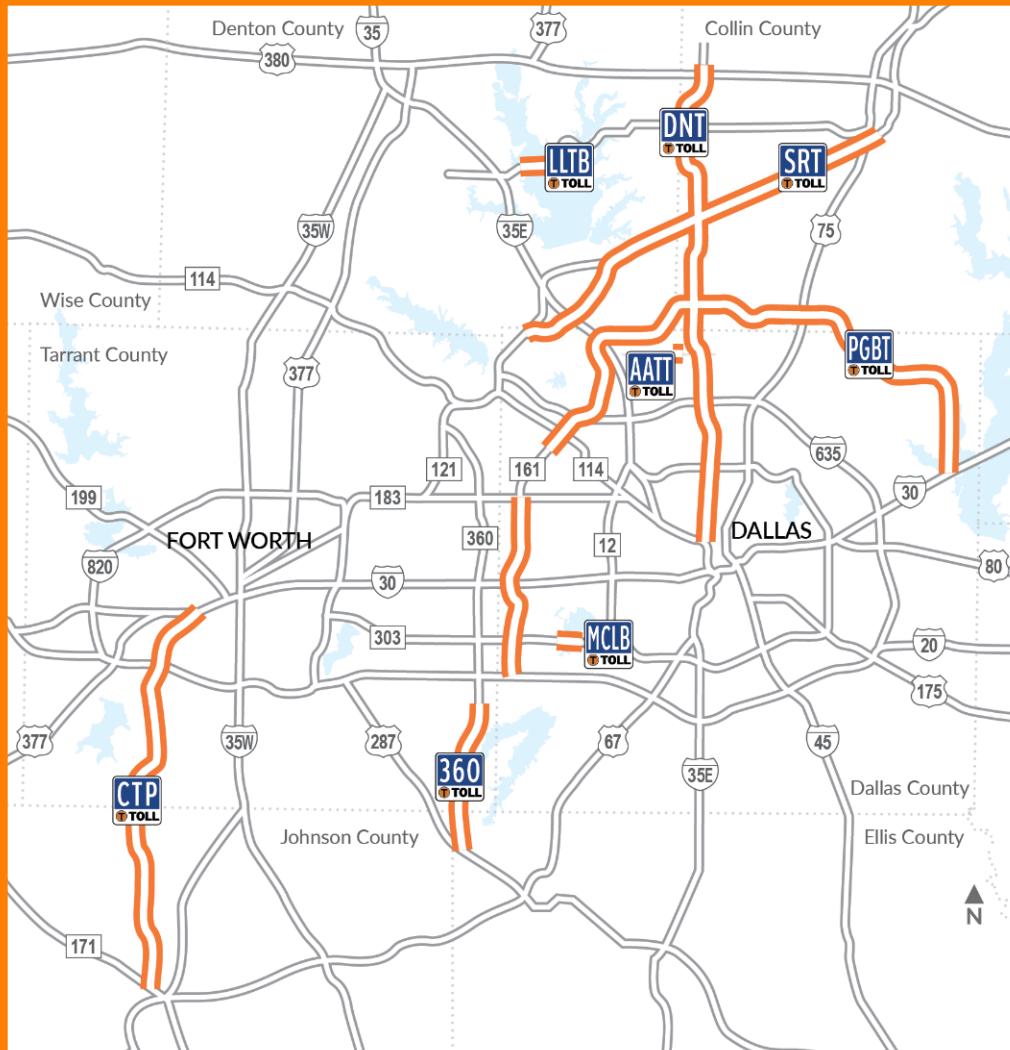
**MCLB**  
Lake Bridge



**PGBT**  
Turnpike



**SRT**  
Tollway



# Project Overview - Maintenance

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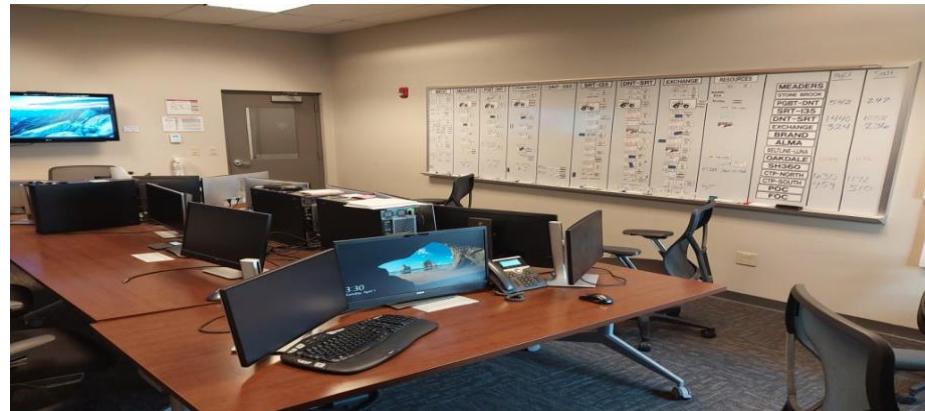
## The Maintenance Department Oversees:

- 1,000+ LM of high-speed facilities, 365 LM elevated
- 97 Pre-set routes
- 24/7 operations, 12-hour shifts
- 100+ equipment, 14 stockpiles
- Nearly 300 personnel



# Project Overview - MEOC

## Inside the Maintenance Emergency Operations Center (MEOC)



# Project Overview – GIS Collaboration

## **The Challenge:**

Liaisons needed a centralized, map-based system to manage calls, and track equipment in real time.

## **The Solution:**

A GIS-integrated application that allows:

- Real-time spatial tracking of incidents and resources
- Streamlined coordination across teams
- Improved reporting and decision-making

## **The Result:**

Faster response, better situational awareness, accurate post-event reporting, and more efficient operations during critical weather events.

# Application Overview

## Snow & Ice Event App

GIS-based solution for real-time tracking and reporting during inclement weather events.

- Enables full visibility into:
  - Event status
  - Vehicle operations
  - Material usage
  - Field communications



## Technology Stack

- Front-End: ArcGIS Experience Builder
- Data Collection: 5 Surveys via ArcGIS Survey123
- Reporting: ArcGIS Insights (PDF summaries post-event)
- Data Analytics: ArcGIS Velocity

# Demo: Create A Call

Snow and Ice Event

Event Call List  
9/16/25, 12:00 PM - 9/17/25, 12:00 PM  
Current Shift: Shift 1  
Current Condition: Red

Create A Call

Sort Data

- Caller: S. Barintos  
Call Type: EQ - Equipment Issue
- Caller: S. Barintos  
Call Type: CALL - Employee Call
- Caller: Kurt  
Call Type: QA - Check-in
- Caller: Pedro  
Call Type: For Information
- Caller: Floyd  
Call Type:
- Caller: Charles Wade  
Call Type: EQ - Equipment Issue
- Caller: Michael Ray  
Call Type: For Information
- Caller: Jason  
Call Type: QA - Check-in

Edit Call

4/4/25, 12:00 PM	0	2
2/18/25, 12:00 PM	2	321

Total: 5 | Selection: 1 Last update: a few seconds ago

Change Condition | Select Event | Manage Event Log | View Shift Schedule | ?

Map showing a complex highway interchange with several overpasses and ramps. The text "SNOW AND ICE EVENTS" is overlaid in large white letters across the center of the map.

Down Vehicles

11

11/11/25, 12:00 PM -  
Number of Calls: 9  
Vehicles: 0

9/16/25, 12:00 PM - 9/17/25, 12:00 PM  
Number of Calls: 98  
Vehicles: 324

4/4/25, 12:00 PM -  
Number of Calls: 0  
Vehicles: 2

2/18/25, 12:00 PM -  
Number of Calls: 2  
Vehicles: 321

1/8/25, 12:00 PM - 1/11/25, 4:00 PM  
Number of Calls: 93  
Vehicles: 513

Last update: a few seconds ago

Truck Size: Big Truck

Fleet Shop:  
Status: Long Term Down

Total: 11 | Selection: 0 Last update: a few seconds ago

Create A New Event

Select an Event Below

11

View

View

View

View

View

View

View

View

View

# Demo: Edit Call

## Snow and Ice Event

Event Call List  
2/18/25, 12:00 PM · Current Shift: Shift 1 · Current Condition: Yellow

Create A Call

Sort Date

Caller: Gibron Ledbetter	Call Type: CALL - Employee Call	<a href="#">Edit Call</a>
Caller: Greg	Call Type: For Information	<a href="#">Edit Call</a>
Caller: Test	Call Type: MAT - Material Request	<a href="#">Edit Call</a>

Map: Dallas, Texas showing snow and ice event locations. The map includes major roads, cities like Dallas, Fort Worth, and Arlington, and various bodies of water. Call locations are marked with red dots and icons. A legend indicates 'Selected features: 0'.

Event Table

Start Date	End Date	Number of Calls	Material	Number of Vehicles
2/18/25, 12:00 PM		3		321

Last update: a few seconds ago | Total: 1 | Selection: 1

## Change Condition

## Select Event

## Manage Event Log

## View Shift Schedule

## ?

## Down Vehicles

2

Search

Fleet Shop: Plano  
Status: Long Term Down  
Vehicle Number: 15101  
Stockpile: DNT/PGBT  
Truck Size: Small Truck

Fleet Shop: Frisco  
Status: Long Term Down  
Vehicle Number: 9318  
Stockpile: SRT/DNT  
Truck Size: Big Truck

Last update: a few seconds ago | Total: 2 | Selection: 0

Last update: a few seconds ago

# Demo: Shift Schedule, Event Log, Condition

Snow and Ice Event

Change Condition Select Event Manage Event Log View Shift Schedule ?

Event Call List

2/18/25, 12:00 PM - Current Shift: Shift 1 Current Condition: Yellow

Create A Call Sort Date

Caller: Gibron Ledbetter Call Type: CALL - Employee Call Edit Call

Caller: Greg Call Type: For Information Edit Call

Caller: Test Call Type: MAT - Material Request Edit Call

Down Vehicles 2

Search

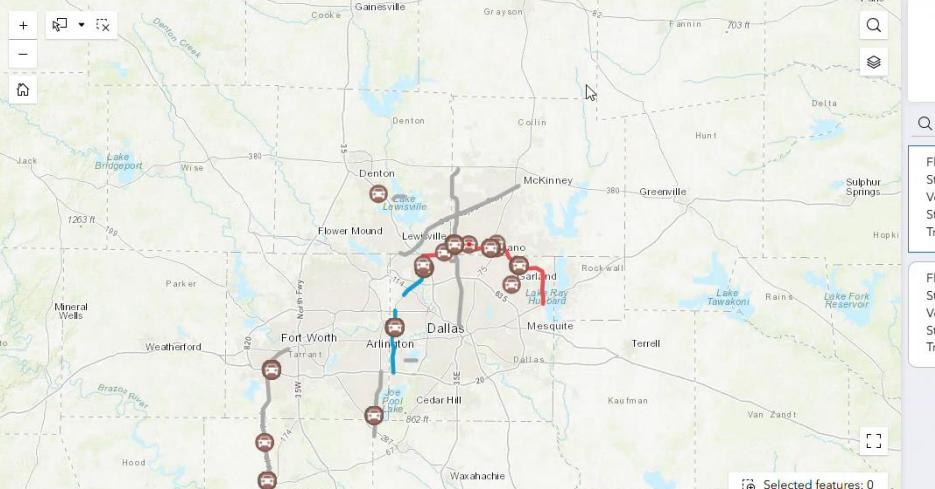
Fleet Shop: Plano Status: Long Term Down Vehicle Number: 15101 Stockpile: DNT/PGBT Truck Size: Small Truck View

Fleet Shop: Frisco Status: Long Term Down Vehicle Number: 9318 Stockpile: SRT/DNT Truck Size: Big Truck View

Event Table

Start Date	End Date	Number of Calls	Material	Number of Vehicles
2/18/25, 12:00 PM		3		321

Last update: a few seconds ago Total: 1 | Selection: 1 Last update: a few seconds ago Total: 2 | Selection: 1 Last update: a few seconds ago Total: 1 | Selection: 1



# Demo: View Vehicles

### Snow and Ice Event

Event Call List  
2/18/25, 12:00 PM -  
Current Shift: Shift 1  
Current Condition: Yellow

Create A Call

Sort Date

Caller: Gibron Ledbetter  
Call Type: CALL - Employee Call

Caller: Greg  
Call Type: For Information

Caller: Test  
Call Type: MAT - Material Request

Map View: Dallas, Texas area showing snow and ice event locations. Major cities include Dallas, Fort Worth, Arlington, and surrounding areas. Numerous red markers indicate active calls or events. A legend in the top right corner shows a red circle for 'Call' and a red square for 'Event'.

Event Table

Start Date	End Date	Number of Calls	Material	Number of Vehicles
2/18/25, 12:00 PM		3		321

### Down Vehicles

2

Search

Fleet Shop: Plano  
Status: Long Term Down  
Vehicle Number: 15101  
Stockpile: DNT/PGBT  
Truck Size: Small Truck

Fleet Shop: Frisco  
Status: Long Term Down  
Vehicle Number: 9318  
Stockpile: SRT/DNT  
Truck Size: Big Truck

# Demo: Fleet

## Snow and Ice Event

Event Call List  
2/18/25, 12:00 PM -  
Current Shift: Shift 1  
Current Condition: Yellow

Create A Call

Sort Date

Caller: Gibron Ledbetter  
Call Type: CALL - Employee Call

Caller: Greg  
Call Type: For Information

Caller: Test  
Call Type: MAT - Material Request

Caller: Test  
Call Type: INC - Incident/Accident

Down Vehicles

2

Search

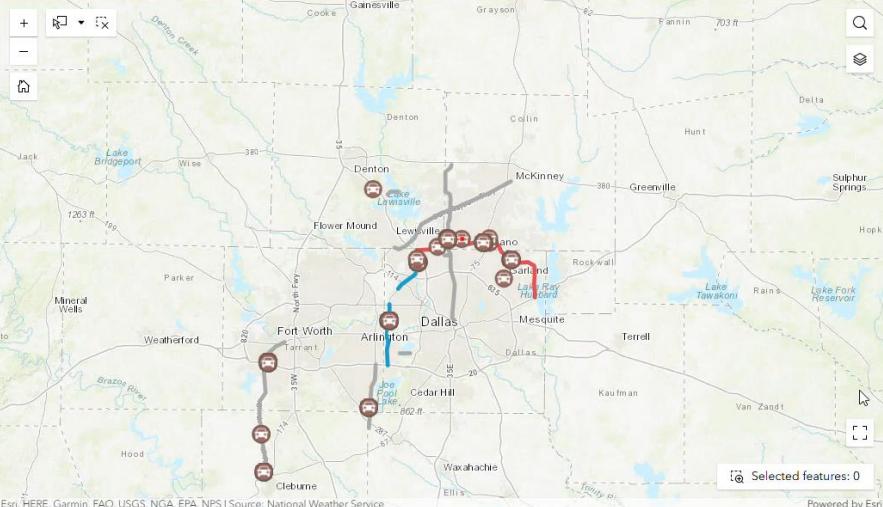
Fleet Shop: Plano  
Status: Long Term Down  
Vehicle Number: 15101  
Stockpile: DNT/GBT  
Truck Size: Small Truck

Fleet Shop: Frisco  
Status: Long Term Down  
Vehicle Number: 9318  
Stockpile: SRT/DNT  
Truck Size: Big Truck

Event Table

Start Date	End Date	Number of Calls	Material	Number of Vehicles
2/18/25, 12:00 PM		4		321

Last update: a few seconds ago Total: 1 | Selection: 1 Last update: a few seconds ago Total: 2 | Selection: 1 Last update: a few seconds ago



# Demo: Stockpile

Snow and Ice Event (Stockpile)

Event Call List

11/11/25, 12:00 PM -



SNOW  
AND  
ICE  
EVENTS

Select Event

View Shift Schedule

?

Select an Event Below

- 11/11/25, 12:00 PM -  
Number of Calls: 9  
Vehicles: 0
- 9/16/25, 12:00 PM - 9/17/25, 12:00 PM  
Number of Calls: 98  
Vehicles: 324
- 4/4/25, 12:00 PM -  
Number of Calls: 0  
Vehicles: 2
- 2/18/25, 12:00 PM -  
Number of Calls: 3  
Vehicles: 321
- 1/8/25, 12:00 PM - 1/11/25, 4:00 PM  
Number of Calls: 93  
Vehicles: 513

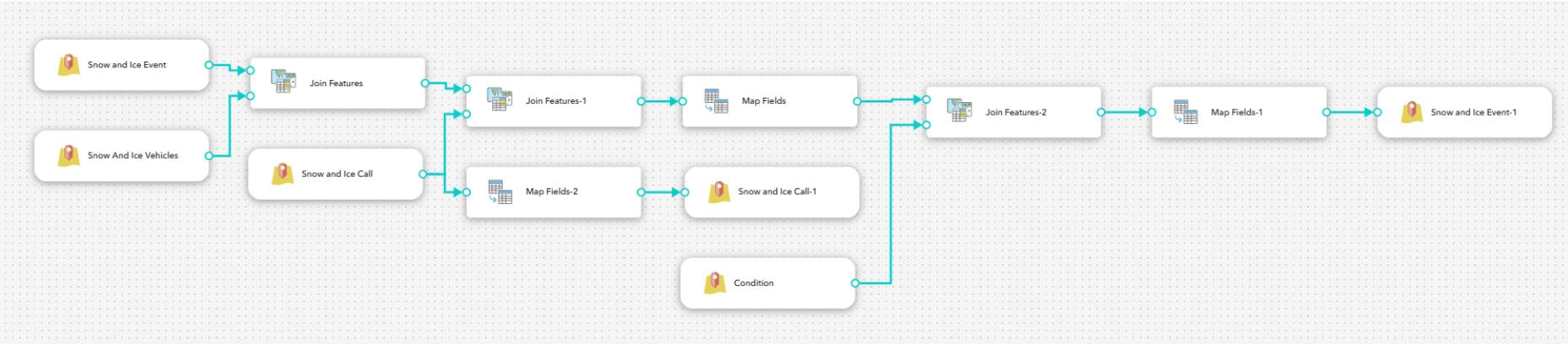
Last update: a few seconds ago

Total: 1 | Selection: 0

Last update: a few seconds ago

Last update: a few seconds ago

# Velocity



# Key Takeaways & Next Steps

- **First Event of the Season:**  
**ESRI service outage → temporarily transitioned to Microsoft Forms**
  - Form results later **appended** to the main dataset

## INC-002175 PIR: Hosted Feature Services responding with http status code 504

### Summary & Timeline:

- On 8th January 2025 at 8:00 PM UTC, some ArcGIS Online users experienced 504 error messages like 'Your request has timed out' or 'Failed to load' when accessing any Hosted Feature Services in maps and/or apps.

### Resolution:

- Esri teams confirmed an automated response triggered by a sudden surge of requests did not respond adequately to avoid system latency and manual intervention was required to distribute the load more effectively.  
- Esri teams took action to restore operations on 8th January 2025 at 9:30 PM UTC. Manual scaling and adjustment to the infrastructure were necessary to meet the load requirements. This included adjustments to the networking, caching, and compute portions of the ArcGIS Online infrastructure.

## Snow And Ice Call

Hi Leahy, Emma, when you submit this form, the owner will see your name and email address  
leahy@ntta.org

### Caller

Enter value here

### Call Type

—

### Date Received

Enter a date

### Employee Call Reason

—

### Location Type

—

### Tollway Address

—

### Intersection

—

Date Received	Call Type	Call Type	Employee	Location Type	Tollway Address	Intersection	Pilot Shop	Action	Who Dispatched	Dispatch Time	Notes	Status
1/9/2025 6:44 PM	INC - Assessment	NO - Assessment Issue	—	Other	—	—	—	—	—	—	Spotted 8083D with broken handle	Closed
1/9/2025 6:45 PM	S. Berlitz	CAU - Employee Call	Other	—	—	—	—	—	—	—	Gas Card not working	Closed
1/9/2025 6:34 PM	Kurt	QA - Check-in	—	—	—	—	—	—	—	—	East end of Bush is clear	Active
1/9/2025 6:24 PM	Pedro	—	—	—	—	—	—	—	—	—	9512 NB on I-35 in Dallas	Closed
1/9/2025 6:23 PM	—	Report	—	—	—	—	—	—	—	—	11331 NB in Dallas	Active
1/9/2025 6:23 PM	Charles Wade	—	—	—	—	—	—	—	—	—	9522 going back to I-35 for electrical issue	Active
1/9/2025 6:23 SOC	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	PGBT WB	PGBT@ROSEMEAD PKWY	Spread MIGL Webber	—	—	1/9/2025 8:34 WB with an incident from SOC	—	Closed
1/9/2025 6:17 SOC	MAT - Material Request	—	—	Entrance Ramp	PGBT SB	PGBT@905-75	Spread MIGL Webber	—	—	1/9/2025 8:34	call from SOC of incident and lane starting to reflare	Closed
1/9/2025 6:24 406	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTP NB	CTP@EDWARDS RANCH RD	Spread MIGL RJA	—	—	1/9/2025 8:34	It's south and contractor will fix it	Closed
1/9/2025 6:21 Optex	CRA - Crash Assistance	—	—	Exit Ramp	DNT NB	DNT@SPRING VALLEY RD	Status Report	—	—	1/9/2025 8:25	Black Honda CRV on the road	Closed
1/9/2025 6:19 SOC	INC - Incident/Accident	INC - Incident/Accident	—	Exit Ramp	PGBT WB	PGBT@905-75	Spread MIGL Webber	—	—	1/9/2025 8:25	Black Honda CRV on the road	Closed
1/9/2025 6:15 NTTA	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTN NB	CTN@HUBER RD	Spread MIGL DNT PBT	—	—	1/9/2025 8:35	called by DNT personnel	Closed
1/9/2025 6:00	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTP NB	CTP@TENNEKSON RD	Spread MIGL DNT PBT	—	—	1/9/2025 8:35	engineering called by DNT personnel	Closed
1/9/2025 6:00	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTP NB	CTP@TENNEKSON RD	Spread MIGL Webber	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:59	INC - Incident/Accident	INC - Incident/Accident	—	Entrance Ramp	PGBT WB	PGBT@905-75	Spread MIGL Webber	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 NTTA	INC - Incident/Accident	INC - Incident/Accident	—	Exit Ramp	PGBT WB	PGBT@HUBER RD	Spread MIGL Webber	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTN NB	CTN@HEADERS LN	Status Report	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 NTTA	INC - Incident/Accident	INC - Incident/Accident	—	Lane 1	CTP NB	CTP@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	SHT NB	SHT@HEADERS PKWY / DRAIG RANCH	Spread MIGL Exchange	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT NB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT WB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT SB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT WB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	CTP NB	CTP@CAMMORE RD	Prow	RJA	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	Lane 3	PGBT WB	PGBT@BENNER RD	Prow	Webber	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 5:55 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	CTP NB	CTP@CR-1015	Prow	RJA	—	1/9/2025 8:35	CTP@TENNEKSON RD	Closed
1/9/2025 11:00	INC - Incident/Accident	INC - Incident/Accident	—	—	—	—	—	—	—	1/9/2025 11:31	Blended the turned over truck and waiting up to assess the	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT NB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT WB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	PGBT SB	PGBT@HUBER RD	Spread MIGL RJA	—	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	CTP NB	CTP@CAMMORE RD	Prow	RJA	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	Lane 3	PGBT WB	PGBT@BENNER RD	Prow	Webber	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed
1/9/2025 11:00 SOC	MAT - Material Request	MAT - Material Request	—	All Lanes	CTP NB	CTP@CR-1015	Prow	RJA	—	1/9/2025 11:31	area for treatment prior to opening to traffic	Closed

# Key Takeaways & Next Steps

- **GIS-first mindset:**  
Encourage use of map input for spatial analysis of recurring problem areas
- **Training gaps:**  
Need standardized training to ensure consistency in call logging
- **Call Survey Revamp:**  
Redesign to simplify user input and ensure all critical data is captured
- **Future Enhancements:**
  - Explore Lidar/iPad-based stockpile measuring tools
  - Power BI reports or printing capabilities from live dashboard

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