



GIS Snow Route Planning Application

Pennsylvania Department of
Transportation

GIS Snow Route Planning Application

- ▶ Department recognized a need for standardization in snow route planning
- ▶ Needed a planning tool to ensure that all roadways were sufficiently covered – no gaps or overlaps
- ▶ Application was designed as a data collection and snow route map generation tool
- ▶ First official release and pilot in the Winter of 2013 with full deployment in 2014

SNOW ROUTE PLANNING

TRUCKS **7** Add

Logged in as: Howard W. Robinson, President

District: 06 County: Dauphin CO Vehicle Type: Department Pile Equipment Number: DAUPHIN (20180) Stockpile: Any

Truck Search Results

Truck Equipment Number: PZ00807

Truck Details

District	County	Truck Type	Stockpile	Truck Equip Number	Equipment
06	DAUPHIN CO	TRUCK-APP	DAUPHIN (20180)	PZ00807	

Attached Equipment

Equipment Number	Type
20180706	FRONT PILE
20180706	SPREADER
20180706	WING PILE 1
20180706	WING PILE 2
20180706	TOW PILE

Same Route Equipment

Primary Material	Planned App. Rate	Planned Cycle Time
SALT	100	10

ID	District	County	Stockpile	Equipment	Equipment Type	Wing	Wing Length	Wing Width	Wing Area	Wing Type	Wing Color	Wing Status
1	DAUPHIN CO	DAUPHIN CO	DAUPHIN (20180)	PZ00807	FRONT PILE	1	10	10	100	FRONT PILE	RED	ACTIVE
2	DAUPHIN CO	DAUPHIN CO	DAUPHIN (20180)	PZ00807	SPREADER	1	10	10	100	SPREADER	RED	ACTIVE
3	DAUPHIN CO	DAUPHIN CO	DAUPHIN (20180)	PZ00807	WING PILE 1	1	10	10	100	WING PILE 1	RED	ACTIVE
4	DAUPHIN CO	DAUPHIN CO	DAUPHIN (20180)	PZ00807	WING PILE 2	1	10	10	100	WING PILE 2	RED	ACTIVE
5	DAUPHIN CO	DAUPHIN CO	DAUPHIN (20180)	PZ00807	TOW PILE	1	10	10	100	TOW PILE	RED	ACTIVE

GIS Snow Route Planning Application

Trucks are assigned to counties and stockpiles with all attached equipment, and route segments assigned to each truck.

Data Input and Output

- ▶ Material mixes, application rates, cycle times and treatment methods are planned based on a “spreading” event
 - “Daytime snow/sleet/ice event accumulating less than 2” with a temperature at 25°F and rising”
- ▶ Truck route assignments are revised annually in the application prior to the winter season
- ▶ Rental and Municipal Winter Services contract information is updated to reflect new or renewed contracts

Data Input and Output

- ▶ Stockpile and individual truck maps are printed directly from the application
- ▶ Data can be downloaded and customized maps can be printed by District GIS operators
- ▶ A bulk data download of all statewide route information is performed on or around November 1.
- ▶ Data from the application is examined to identify inconsistencies in planning and treatment strategies

Snow Route Summaries and Maps

- ▶ Maps and route summary sheets are available directly from the Application
- ▶ Interactive maps allow users to see route details by clicking on routes

Department Force Truck PennDOT Snow Route Planning Application

Truck Equipment Number: P228087

Details

Count: FRANKLIN Truck Type: TRENCH WALKER Details: ROAD BANK GRABBER

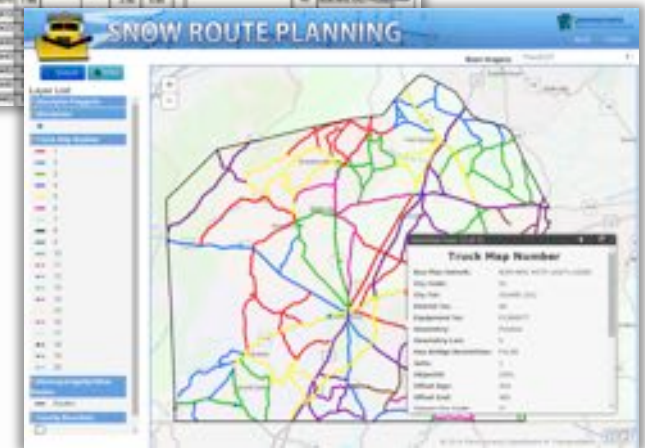
Truck Map Number: 8

Attached Equipment

Equipment	Equipment Number	Type
BUCKET LOADER	P128718	ONE WAY ADJUSTABLE
SPREADER	P82188	STAINLESS TAILGATE
WIND PLOW	P88217	RIGHT WING
WIND PLOW		
SOIL PLOW		

Snow Route Assignment

Location	Start Date	End Date	Start Time	End Time	Assigned To	Status	Truck Map Number
...



County and Stockpile Map Examples



Data Analysis – Maps and Reports

- ▶ Data Validation Reports
 - Truck number verification
 - Gaps and overlaps report
 - Truck SLM threshold (i.e. trucks < 25 SLM)
 - Trucks without assigned equipment, materials, application rate, etc.
 - Expired agreements report
- ▶ Data Analysis Maps
 - Anti-icing network
 - Planned material mixes
 - Planned salt application rates

Issues and Potential Enhancements

- ▶ Conflicts with changing roadway geometry and equipment assignments were recognized early on
 - *Added auto-updating of geometry and equipment numbers*
- ▶ Initially several input criteria were left open-ended and lacked consistency in data entry among end users
 - *Some input fields changed to auto-entry or locked for editing*
- ▶ In some cases, significant manual work is required to transfer routes between trucks
 - *Actively developing solutions to limit manual work*
- ▶ Maps are not fully customizable within the application
 - *Exploring options for future upgrades to allow for custom internal maps*

Core Benefits

- ▶ County, stockpile, and route maps available instantly
- ▶ Current inventory of equipment and route assignments
- ▶ Inconsistencies and gaps in planning are easily identified
- ▶ Has become a source for statewide snow route data
- ▶ Significant reduction in manual calculations and mapping, thus reducing potential errors



For additional information or assistance regarding winter operations, contact the Bureau of Maintenance and Operations, Winter Operations personnel

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