

MS4 Pollution Prevention

Public Works Yards

Pete Wood
DNR Sturtevant

MS4 Permit Requirement

- Storm water pollution prevention planning for municipal garages, storage areas and other sources of storm water pollution from municipal facilities.

Storm Water Pollution Prevention Plan (SWPPP)

- SWPPP Map
 - Drainage Patterns
 - Sources of storm water pollutants
 - Best Management Practices



Source Controls

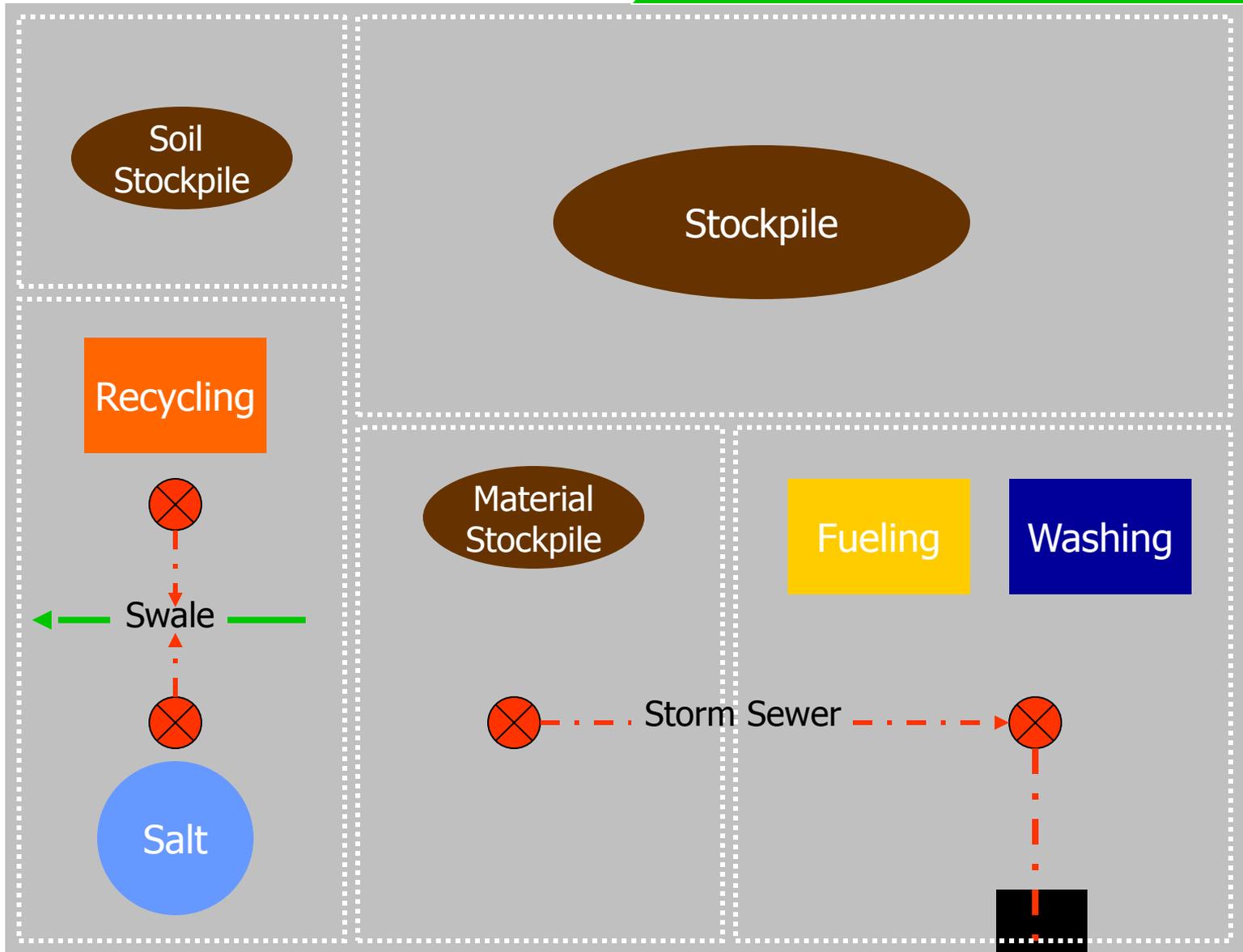


Treatment Practices

Hartsookville DPW Yard

Wetland

River



Soil Stockpile

Stockpile

Recycling

Material Stockpile

Fueling

Washing

Swale

Storm Sewer

Salt

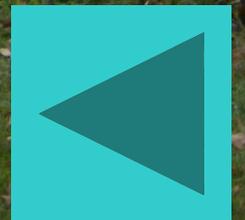


Small Stockpile (< 1 acre)





Small Stockpile (< 1 acre)



Large Stockpile (> 1 acre)



Large Stockpile (> 1 acre)



Vehicle Tracking

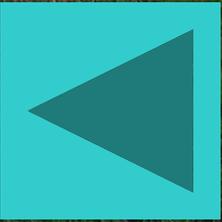




Outside Washing

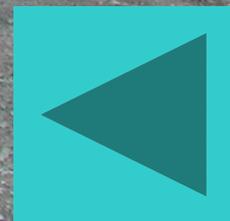


Outside Washing





Fueling Island



Material Storage



Material Storage



Salt Storage



Recycling Storage



Recycling Storage

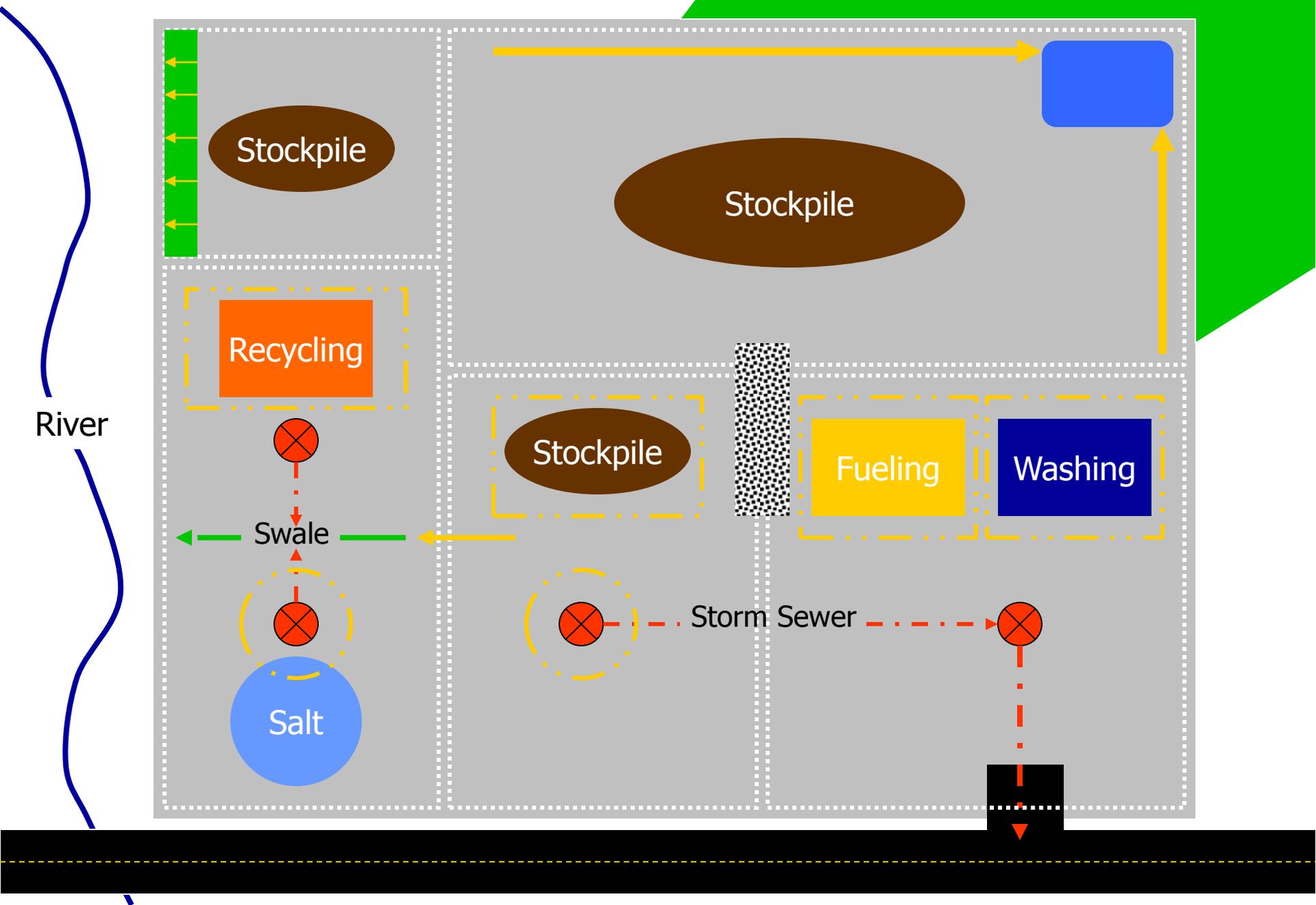


Recycling Storage



New Hartsookville DPW Yard

Wetland





TP

Vegetative Buffer (1054)



TP

Vegetative Buffer



Ditch Check (1062)

TP

Manufactured Perimeter Control (1071)





TP

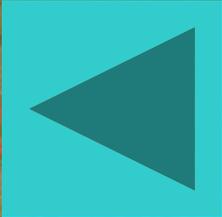
Diversion Berm (1066)



TP

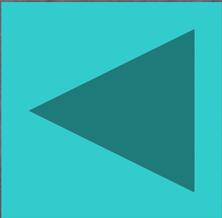
Sediment Trap (1063)

AUG



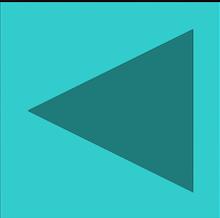


Tracking Pad (1057)





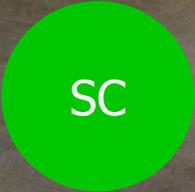
Indoor Washing



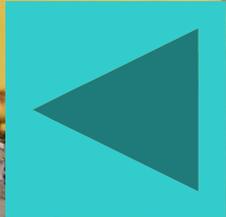


SC

Fuel Island Canopy



Fuel Island Spill Kit





No Exposure





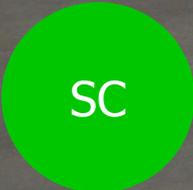
SC

No Exposure

SC

No Exposure





SC

No Exposure



TP

Inlet Protection (1060)



TP

Proprietary Settling Device (1006)





TP

Grass Swale



TP

Grass Swale



TP

Grass Swale





SC

No Exposure



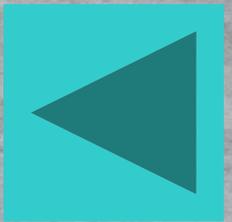
MATERIALS PROHIBITED

PLEASE EMPTY YOUR OIL CONTAINER IN BIN WITH LID NO ANTI-FREEZE

OIL FILTERS ONLY

USED ANTI-FREEZE FOR RECYCLING ONLY

Spill Containment





Holding Tank





SC

Holding Area

Recommendations

- Identify source control and treatment practices on SWPPP Map
- No Exposure, No Exposure, No Exposure!
- Utilize existing DNR technical standards for erosion & sediment control and storm water management



A Review of Winter Road Management Practices in Southeastern Wisconsin

Erin Brault

DNR Stormwater Management Intern

14 March 2012

OBJECTIVE

- ▶ Salt used for winter road management may have long-term impact on aquatic ecosystems & water quality
- ▶ Preliminary study
- ▶ Will verify findings with communities

- *How do municipal road management practices compare?*
- *Provide feedback and identify effective fiscal practices that maintain road safety*

METHODOLOGY

- ▶ Review MS4 annual reports & program submittals for salt use practices
- ▶ Summarize criteria:
 - ▶ Products used, application methods, areas applied
- ▶ Generate map of regional salt use with GIS
 - ▶ SEWRPC land use data used to measure road acreage for each community
- ▶ Determine total salt per road acre as a measure of comparison
- ▶ 2009-2010 season used in analysis

CRITERIA

▶ Products:

- ▶ Rock salt
- ▶ Sand/Salt mixtures
- ▶ Calcium Chloride
- ▶ Magnesium Chloride
- ▶ Beet juice

▶ Application Methods:

- ▶ Plowing
- ▶ Salting
- ▶ Pre-wetting of salt

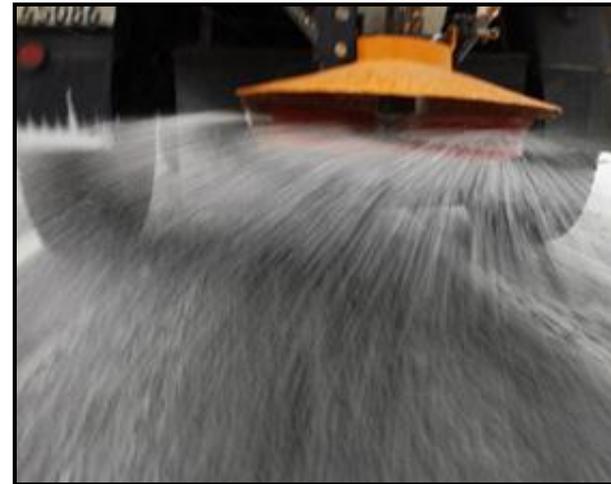


Image Source: <http://news.discovery.com/autos/salt-roads-environment-technology.html>

▶ Areas Applied to:

- ▶ Entire roadway
- ▶ Hills, intersections only
- ▶ Main arterials

FINDINGS

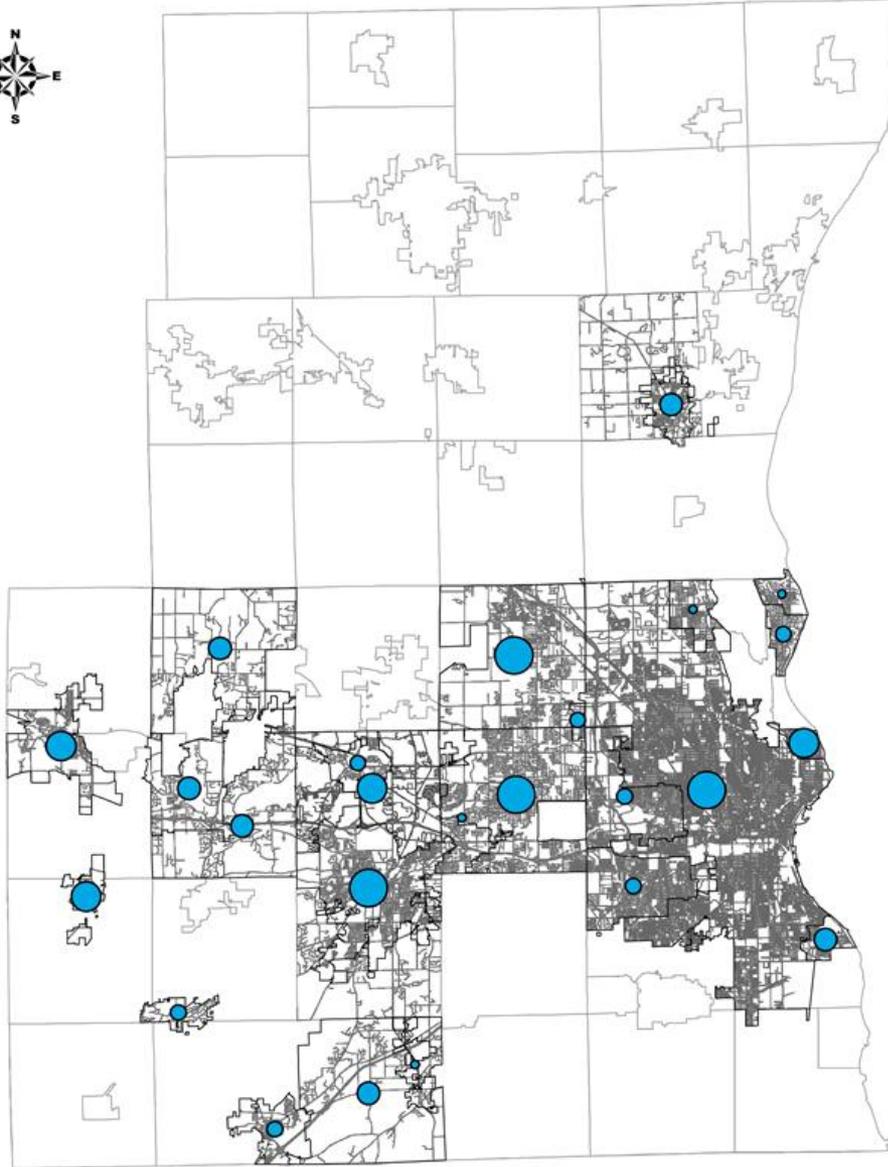
- ▶ 2009-2010 winter season
- ▶ Amount of salt used by all communities (n=25):
 - ▶ Average: 2,764 tons
 - ▶ Min: 88.5 tons, Max: 36,077 tons
- ▶ Amount of sand used by all communities (n=5):
 - ▶ Average: 721 tons
 - ▶ Min: 20 tons, Max: 2,835 tons
- ▶ Ratio salt tonnage per road acre (tons/acre):
 - ▶ Average: 0.52
 - ▶ Min: 0.065, Max: 1.54

FINDINGS

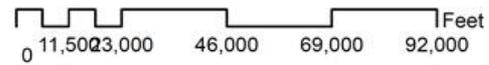
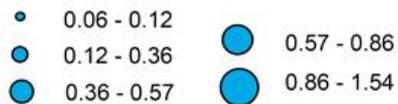
- ▶ Communities only using salt (n=20):
 - ▶ Average total salt amount: **3,076 tons** per road acres
 - ▶ Min: 88.5 tons, Max: 4,078 tons
 - ▶ Average ratio salt tonnage per road acre (tons/acre): **0.52**
 - ▶ Min: 0.065, Max: 1.019

- ▶ Communities using salt/sand mix (n=5):
 - ▶ Average total salt amount: **1,516 tons** per road acres
 - ▶ Min: 250 tons, Max: 4,805 tons
 - ▶ Average ratio salt tonnage per road acre (tons/acre): **0.50**
 - ▶ Min: 0.120, Max: 1.157

Salt Use in the Southeastern Wisconsin Region

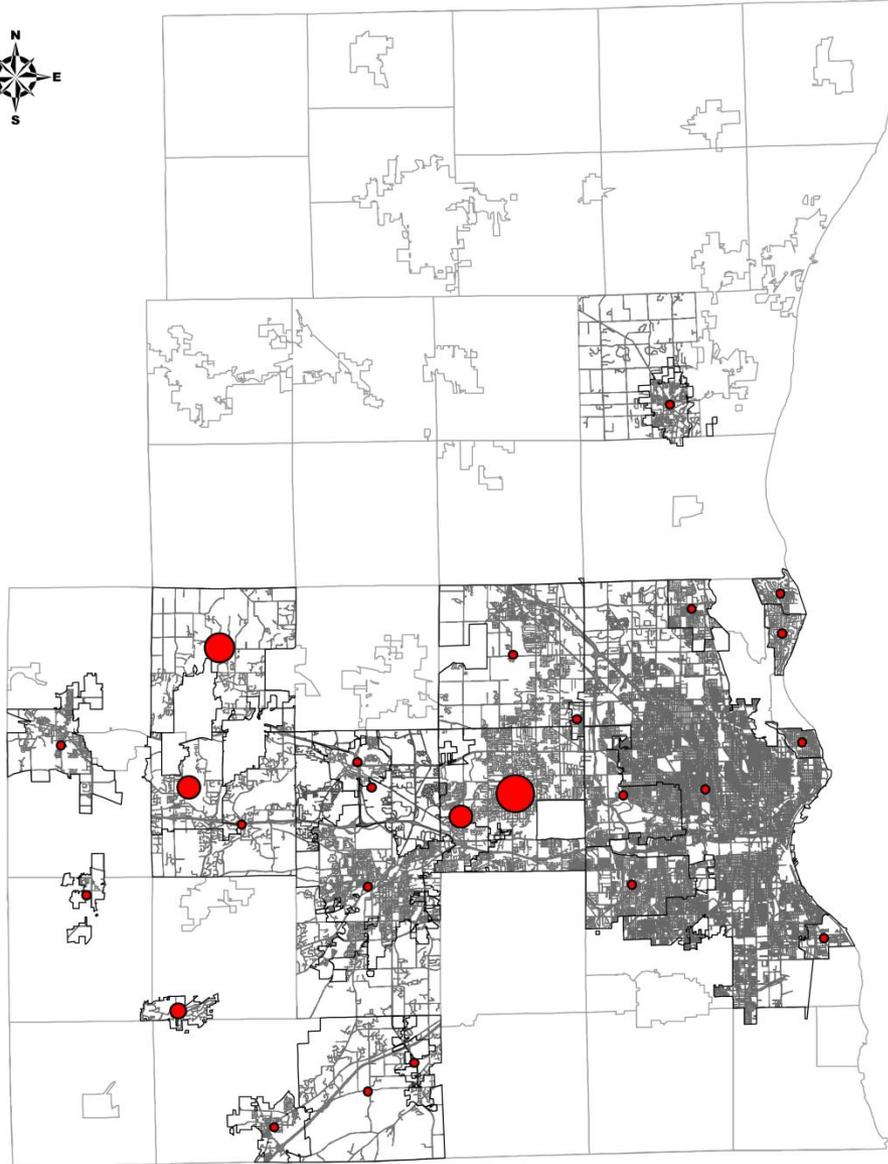


Ratio Salt Tonnage per Road Acre

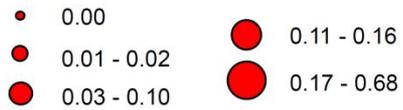


March 14, 2012

Sand Use in the Southeastern Wisconsin Region



Ratio Sand Tonnage per Road Acre



March 14, 2012

CONCLUSIONS

- ▶ Ratio of salt tonnage per road acre provides a means of comparatively assessing salt use in different communities
- ▶ The amount of total salt tonnage per road acre appears to vary substantially



Image Source: <http://www.pbs.org/newshour/rundown/2011/01/why-does-salt-melt-road-ice.html>

CHALLENGES

- ▶ Consistency in reporting
 - ▶ January 1st – June 30th
 - ▶ July 1st – December 31st
- ▶ Incomplete information of winter road management practices
- ▶ More information needed to incorporate application methods, areas applied, and costs

POSSIBLE TEMPLATE FORMAT

- ▶ Table format to record product amount per winter season

Salt	Year				
	2007	2008	2009	2010	2011
January 1st - June 30th	# Tons				
July 1st - December 31st	# Tons				

Sand	Year				
	2007	2008	2009	2010	2011
January 1st - June 30th	# Tons				
July 1st - December 31st	# Tons				

NEXT STEPS

- ▶ Expand study to include additional communities
- ▶ Survey satisfaction with current method, alternative products
- ▶ Assess application methods and potential cost savings
- ▶ Develop subgroups to compare communities of similar land use and density patterns
- ▶ Spatial & statistical analyses
- ▶ Compare to chloride concentrations in local waterways

QUESTIONS?



Image Source: dailyreporter.com/2010/12/07/pass-the-salt/

Contact information: erin.brault@gmail.com

March 14, 2012