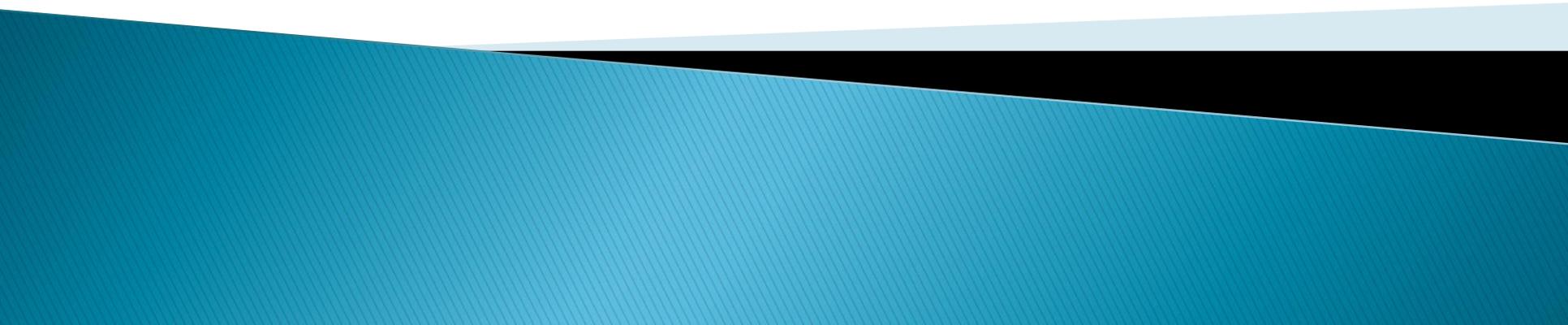


2015
Superintendents and
Mechanics Conference

Snow and Ice
Panel Discussion



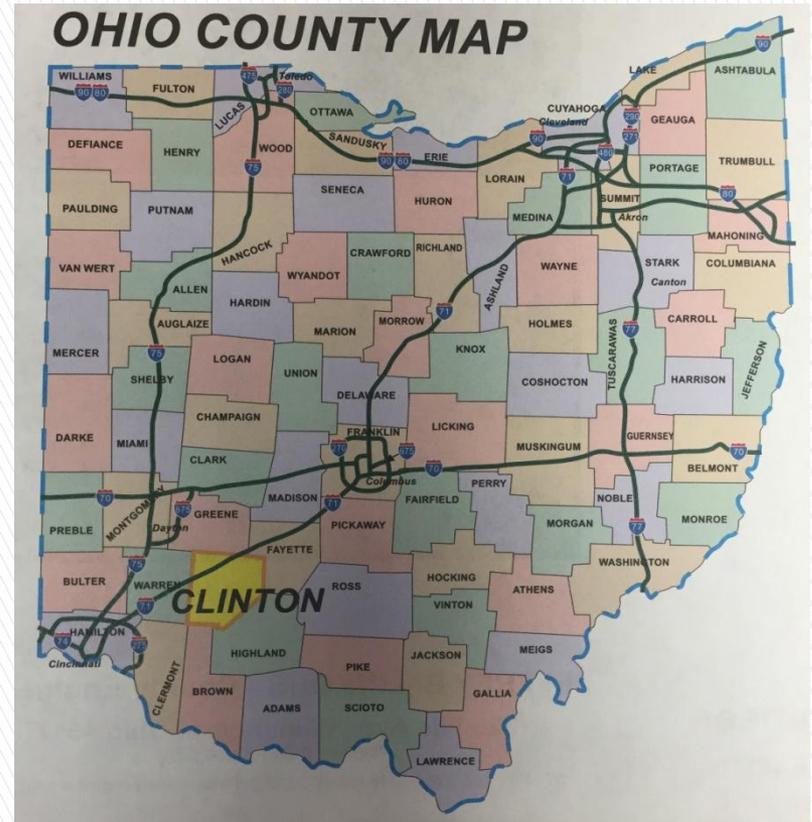


Clinton County Engineer and Highway Department

Salt Storage
Snow Plow Routing

Clinton County

- ▶ Southwest Ohio
- ▶ County Seat:
Wilmington
- ▶ Population: 42,040
- ▶ Area: 403 sq. Miles
- ▶ County Roads
265.81 miles
- ▶ 296 Bridges
- ▶ 24 full-time Highway
workers



Salt Storage



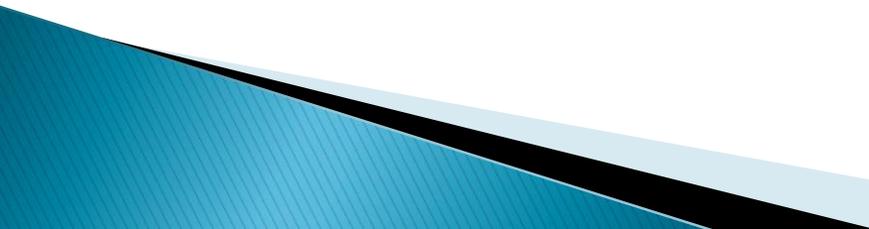
Salt Storage

- ▶ 1970's to 2006
 - ▶ Storage of Salt piled outside with tarps/covers
 - ▶ Small barn where we kept mixed material
 - ▶ Stone/grit stored outside
 - ▶ Used track loader to break up clumps
 - ▶ Clogged up equipment
 - ▶ Hard to keep a good mix
- 

Other issues

- ▶ Runoff of salt onto adjacent property
 - ▶ Wasted material
 - ▶ Uneven mix
 - ▶ Hard to keep tarped
 - ▶ Extra time to break up clumps
 - ▶ Extra time to load trucks
- 

Salt Storage Needs

- ▶ 3 types of materials
 - Salt 2500 tons
 - Grit 2500 tons
 - Mix 1500 tons
 - ▶ Keep material dry
 - ▶ Ease of unloading Salt deliveries
 - ▶ Ease of mixing
 - ▶ Ease of loading trucks with material
- 

Designs

▶ Wooden Structure

- Large enough to store all materials
- Concrete footings with wooden walls
- Bid in 2004 and exceeded our quotes by 75%

Fabric Structure with concrete walls

3 separate structures

Steel/Aluminum Structure with Concrete walls

- 3 separate structures

Final Solution

- ▶ Prepare all site work with county forces
 - ▶ Construct footers with county forces
 - ▶ Contract forming and walls.
 - ▶ Bid Structures with two alternates
 - Fabric
 - Steel/Aluminum
 - ▶ Install structures with County Forces
 - ▶ Pave floors with county forces
 - ▶ Finish all site work
- 

Bid Structures with 2 alternatives

3 separate structures

2 at 70' span, 100 feet length

1 at 50' span, 100 feet length

▶ Alternate 1

- Fabric
- Aluminum Frame work
- Installed by county forces on concrete walls

▶ Alternate 2

- Aluminized Steel
- 18 Gauge
- G90 Galvalume
- Installed by county forces on concrete walls

Estimated \$170,000

Bid Price \$115,475

Site Preparation



Clearing and layout



Footers being dug

Footer Construction



Footer Construction



Concrete design



Type C mix with Ipanex



Contracted walls

Wall Construction



Next footers

Structure Construction



Channel on wall



Packages of material



Home made device



First panel





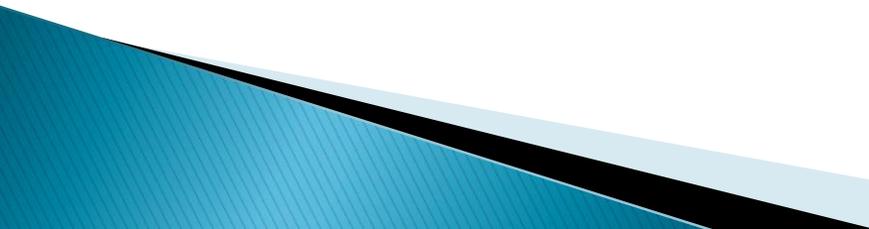






Salt Mix Grit

Final Costs

- ▶ Walls \$22,755 contracted
 - ▶ Structure \$115,475 (bid)
 - ▶ Materials \$190,606 (Rebar, Concrete, etc.)
 - ▶ Site Preparation
 - ▶ Footers
 - ▶ Installation
 - ▶ Finish All done with county forces
- 

Snow Routes

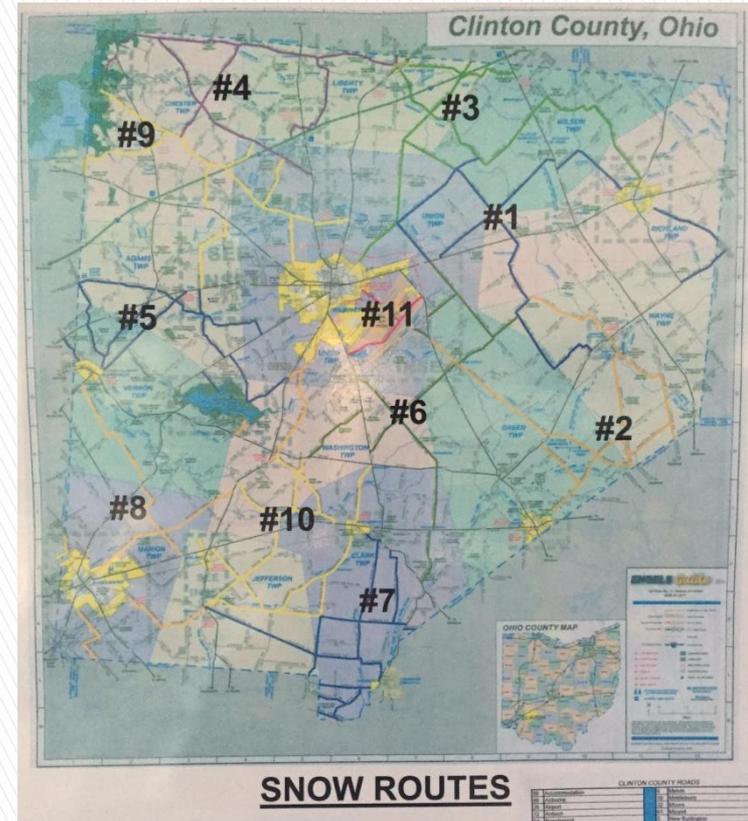


Snow Plow Routing

- ▶ Original Routes setup in the 70's and 80's
 - ▶ 10 basic routes
 - ▶ Added extra route when we had Airborne Express/DHL active at air park.
 - ▶ Made adjustments in 2010
 - ▶ All material and loading done from one location
- 

Original routes

- ▶ Current routes
- ▶ 11 routes
- ▶ Setup in quadrants
- ▶ Equal mileage



Goals

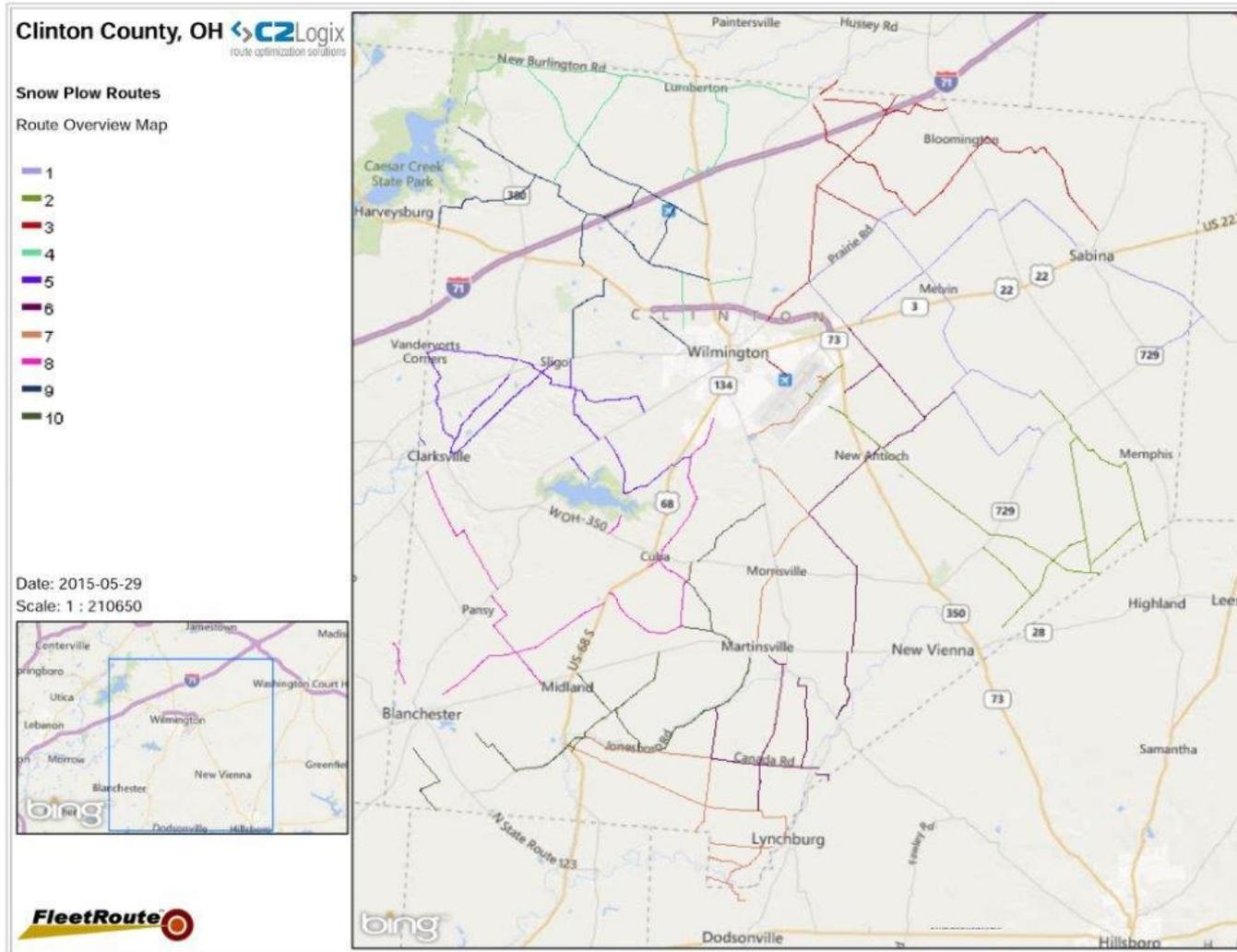
- ▶ Best efficiency
 - ▶ 4 hour travel time
 - ▶ Average length of routes to be even
 - ▶ Hit main routes first
 - ▶ Reduce dead-heading
 - ▶ Adjust for drifting areas
 - ▶ Size of truck/load for route
 - ▶ Reduce length of travel
- 

- ▶ Provided all data on current road system to consultant
 - ▶ Decided basic inputs
 - Average speed
 - Using county/state routes
 - Size of load
 - Similar length of routes
 - 4 hour turnaround
- 

Results

- ▶ First mapping effort included many errors
 - ▶ Had trouble with too much dead-heading
 - ▶ Routes cutting across township roads
 - ▶ Need to adjust for higher traveled roads
 - ▶ Need to tweak routes based on;
 - Drifting
 - Turns
 - Size of truck on route
 - Travel time
- 

Resulting map



Future problems?

PREPPING FOR WINTER | By Matt Wittum

Easy on the salt

EPA requires reducing chloride impacts during winter maintenance operations. Operator certification courses help make that happen.

With another winter just around the corner, imagine this scenario: All of your equipment is tested and ready to go, deciding products have been delivered, and your staff had its pre-season meetings dry runs.

Winter maintenance operations just where they need to be.

Then it happens: You receive communication from your local EPA.

They want to meet to discuss your department's past salt usage, review current operations and practices, possibly identify areas in your county to monitor chloride levels and groundwater systems. They'd like you to present a plan for salt. To put a cherry on top of the day, they may even tell you you must lower usage by 20 percent.

That same exact scenario is playing out, but public works departments from the Midwest to the West Coast are being required to reduce chloride impacts from their winter maintenance operations.

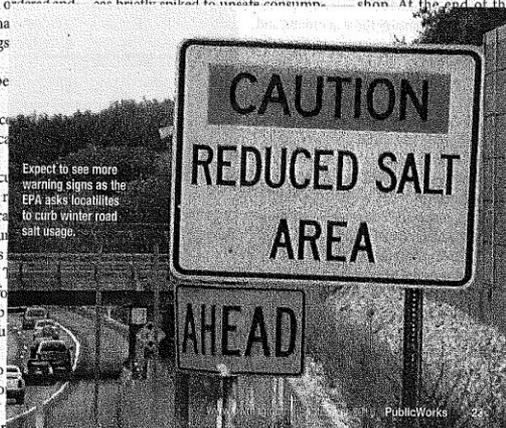
For example, the municipality for which I work is in an Illinois county that

sits on heavy sand/gravel deposits left behind from glacier movements, making groundwater contamination a very real issue. Monitoring wells verified what was feared: Chloride levels in some areas have briefly spiked to unsafe consump-

tion levels. The county is a member of the association's annual North American Snow Conference.

McHenry County, Ill., health, transportation, and water resources departments' Winter Snow and Ice Workshop. At the end of the day-long

Expect to see more warning signs as the EPA asks localities to curb winter road salt usage.



workshop receive and Ice and al-lopment

help teach, county DOT, nt Mark local and

ment op- spray pes- training, to is jobs for required. al that can

er best: We ore some-

American Public Works Association's (APWA) Winter Maintenance Supervisor (WMS) Certificate, which is available in a workshop on the first

In-depth education for only \$25. The county's groundwater resource manager explains that one tablespoon of salt contaminates five gallons of wa-

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