

Proponent Testimony
For
House Bill 393
From
Dave Mansbery
Before the
House Energy & Natural Resources Committee
On
Tuesday, January 16, 2018

Chairman Landis, Vice Chair Hagan, Ranking Minority Member O'Brien and members of the House Energy & Natural Resources Committee thank you for the opportunity to provide proponent testimony today on HB 393. My name is Dave Mansbery and I'm the owner of Duck Creek Energy, Inc. and Nature's Own Source, LLC which processes raw brine into a new finished product called *AquaSalina*.

What are we asking?

I'm here today to discuss with you a change to Ohio law that encourages processing and reuse of the water byproduct of conventional non shale labeled formations production wells (also known as raw "brine"). I have samples of each so you can see for your very own eyes the difference (or see attached pictures). Under current Ohio law, state and local governments are exempt from storage and application of this oily, dirty salt water – but not the private sector. I'm not here to ask for the same type of exemption. My ask is that once a company goes through the time and expense to process raw brine into a finished product or commodity that is not expected to result in damage or injury to public health, safety or the environment ODNR's job is complete.

Duck Creek Energy and Nature's Own have been producing *AquaSalina* at its Cleveland facility since ODNR provided a Chief's Order in 2004. I along with my team began selling this product to local governments, universities, churches, schools, retailers and other small businesses as an alternative to simply dumping salt or raw brine to help keep roads, sidewalks and other surfaces safe when temps get as low as -15 degrees.

We have been working with ODNR on a solution, but have come to a crossroads. ODNR's position is that the Ohio General Assembly changed ORC 1509.22 in the 130th budget bill, HB 59, which adds regulatory burdens on my company and any private sector company or individual hauling and using AquaSalina. ODNR's position is that even after we have processed raw brine anyone using our product must register as a UIC hauler, pay the \$50 fee, as well as track and report back to ODNR where they use our product. That includes anyone who decides to go purchase a 2-gallon container of my product at Lowe's in Northeast Ohio. My question is why? This places my product at a competitive disadvantage when someone can buy a bag of salt or a product that contains the same chemical composition without government fees or reporting obligation. In this case, government overregulation seems to be an understatement.

Since this General Assembly and several before it have been more inclined to enact common sense laws and regulations I will agree to disagree with ODNR's interpretation and hope you will do the same by supporting this law change.

What makes AquaSalina better?

What's the secret? Man-made brine can deice at temperatures between 20-25 degrees Fahrenheit and rock salt is only effective to 6 degrees. But, *AquaSalina* is 400 million year old ancient sea water. It can deice to -15 degrees. It also eliminates the need for public and private entities to fowl fresh water to make brine for road treatments by combining salt and treated water used from public sources. Independent studies provide proof that using liquids, like AquaSalina, in conjunction with salt reduces rock salt consumption by up to 30 percent putting less chlorides into lakes and rivers. In addition, while state and local

governments are permitted under current law to dump raw brine for deicing and dust suppression at up to 3,000 gallons per lane mile you only need to use 30-50 gallons of *AquaSalina* for deicing the same distance. In all circumstance *AquaSalina* is absolutely the most environmentally friendly out of all surface application options.

Third Party Validation

I knew we were doing a good thing, but I wanted third party validation of our product. So, we focused on additional national and state certification for *AquaSalina* and educating the public on the product. The product has been thoroughly studied by the Temple University for Pennsylvania DOT, as well as the University of Akron study for our own ODOT and Montana State University for Ohio DOT, which include chemical, environmental and ice melting capacity. AquaSalina and AquaSalina products always comes out #1 as a top rated product when looking at these three factors.

As the reputation of *AquaSalina* has grown Duck Creek Energy and Nature's Own has experienced steady growth over the last decade. I expanded operations in 2015 by opening up the Mogadore facility to handle the volume of demand. A big reason for the expansion was the addition of two clients that are important to all of us and our families – the Ohio Department of Transportation (11 of the 12 districts) and the Ohio Turnpike Commission. . I've attached several news articles where ODOT drivers talk about the benefits of using AquaSalina in colder temperatures as we have seen in recent weeks. (See attached map with ODOT, Turnpike and pinpoint location of many AquaSalina customers across the state).

ODOT and Turnpike officials did their due diligence before buying AquaSalina. One criteria was becoming an approved and a qualified product listing of the Pacific Northwest Snowfighters (PNS) and the Clear Roads Organization, which is made up of 34 state Department of Transportation. Ohio DOT is a member. In order to sell to product in Ohio this PNSA certification is required. So I did it.

The capacity to do more

In 2013-14 Duck Creek processed 764,000 gallons of raw brine. In 2014-15, due to the colder winter, it processed 2.4 million gallons. And in 2015-16, Duck Creek processed roughly 2 million gallons. That means for every gallon of raw brine produced into AquaSalina that saves one more gallon of fresh water from being fouled with salt and one more gallon not being injected into a well. Duck Creek's two facilities can process 6,000 gallons an hour each and if operated 24 hours per day they could process 280,000 gallons a day or over 100 million gallons a year.

Conclusion

Mr. Chairman and members of the committee we should be promoting small businesses like Duck Creek Energy and the innovative solutions to problems every chance we get. We don't know of anyone else in this predicament. I'm just a small business owner that figured out how to take the dirty, oily raw brine water from conventional formations, like the Clinton , (at no cost to the Producer) and process it to make a useful product rather than paying to have it dumped into a Class II injection well. That is a good thing by itself. But, I along with my team go a step further. We recycle the oil, filter the remaining water and turn it into a product to keep Ohioans safer when used by ODOT, Ohio Turnpike, local governments, universities, churches, schools, retailers and other small businesses as an alternative to simply dumping salt, raw brine or fouling fresh water with salt to make man-made brine. I hope you will agree that HB 393 is good public policy and the state should encourage more companies to find useful ways to use such byproducts rather than making it more difficult to do business in Ohio.

Thank you for your time and attention. I want to thank Rep. DeVitis and Rep. O'Brien for introducing HB 393. I, along with my legislative counsel, Tony Fiore from Kegler Brown Hill + Ritter, would be happy to answer any questions.

Since 2004, the Ohio Department of Natural Resources has found that AquaSalina™ is a commodity and not subject to the same brine regulations as “raw brine”

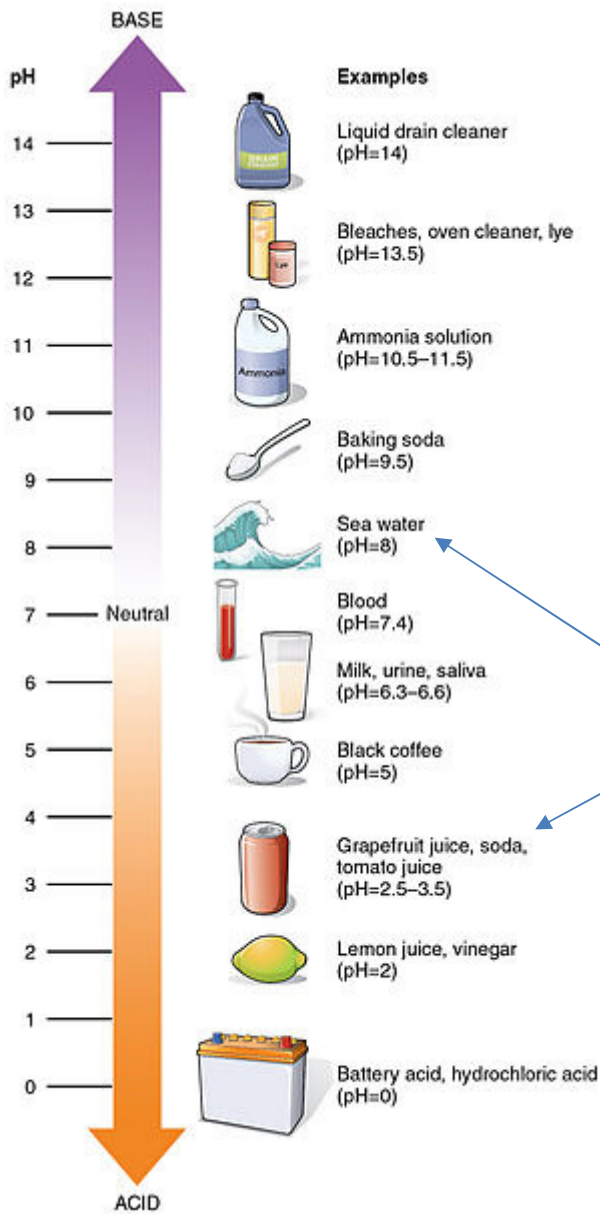
Transcribed from 2004-82 Order by the Chief of ODNR titled “APPROVAL OF A NEW METHOD OF BRINE DISPOSAL” dated October 22, 2004 (renewed annually through 2016) – see attached

- “Unlike untreated produced brine, AquaSalina™ is a commodity, not a waste product for which users of AquaSalina™ will be charged a fee. The recommended spreading rate for AquaSalina™ is less than the maximum allowable spreading rate currently allowed by Section 1509.226(B)(5) of the Ohio Revised Code for raw brine. When spread at the recommended-rate, AquaSalina™ will not cause, or cannot reasonably be anticipated to cause water consumed by humans or domestic animals to exceed the standards of the Safe Drinking Water Act or result in damage or injury to public health, safety or the environment.”
- “Pursuant to Section 1509.22(C)(1) of the Ohio Revised Code (O.R.C.), the Division of Mineral Resources Management hereby conditionally approves the use of AquaSalina™ as a new technology for disposal of brine for de-icing road surfaces, or dust control, use in port-a-john restrooms, or other product applications so approved by the Division from time to time. Surface application of AquaSalina™ is exempt from compliance with Section 1509.226(A-F, H and I) of the O.R.C.”
- “AquaSalina™ will only be transported and spread from Duck Creek Energy, Inc.’s processing facility with vehicles that are exempt under O.R.C. 1509.226(G) and that are not used for transportation of oilfield brine or other chemicals or substances that may be hazardous to public health or safety or by other dedicated vehicles that are not used for transportation of oilfield brine or other chemicals or substances that may be hazardous to public health or safety. Pursuant to 1509.226(G) because the disposal of AquaSalina™ under this Order is a new technology, such dedicated vehicles are exempt from the registration, disposal plan and surety bond requirements under 1509.222, 223 and 225 of the Ohio Revised Code.”

ODNR Confirmation Letter from Tom Tomastik dated February 10, 2011 – see attached

- “Pursuant to Section 1509.22(C)(1) of the Ohio Revised Code, the Division of Mineral Resources Management (Division) hereby conditionally approves the use of AquaSalina™ as a new technology for disposal of brine for de-icing road surfaces, or dust control, use in port-a-john restrooms, or other product applications so approved by the Division from time to time. Surface application of AquaSalina™ is exempt from compliance with Section 1509.226(A-F, H and I) of the Ohio Revised Code.”
- “This exemption means that AquaSalina™ can be applied to road surfaces without obtaining a resolution from the county and does not have to adhere to the nine guidelines required of the spreading of untreated oilfield brine under Section 1509.226(B) of the Ohio Revised Code.”

AquaSalina™ is between grapefruit juice and sea water as it relates to acidity



AquaSalina is **not produced for human consumption**, but here are some fun facts:

By way of comparison,

- Skittles, gummy bears and some more sour candy have pH levels of 1.6 to 3.5.
- Gatorade and Powerade have pH levels of between 2.67 to 2.99.



Between 3.78 – 8.0%

- ODNR’s current approach indicates that it will NEVER approve a process that treats brine to a non-regulated level. But this is an overarching objective of the industry – to create a product that will eliminate or minimize injection well disposal. ODNR agreed from 2004 until 2016 that was the right approach.
- In light of the cost to treat brine to produce AquaSalina™, ODNR’s continued regulation simply encourages the use of raw brine on the roads at in far higher quantities. If I can get it for free, I’m not going to pay extra for AquaSalina™.
- Class II Injection wells are the main disposal option for brine – vertical and horizontal. The public is very adverse to the risk of injection wells and any means to reduce Ohio’s reliance on these wells is a benefit. Also preserves fresh water.

ODOT due diligence before utilizing AquaSalina™ in 10 of 12 Districts as well as the Ohio Turnpike to keep Ohio roads safer during bad weather.



AquaSalina™ went through 13 months of review before becoming a Qualified Product through the Clear Roads Group and the Pacific Northwest Snowfighters.

<p><u>Clear Roads Group</u></p> <p>Clear Roads is a national research consortium focused on rigorous testing of winter maintenance materials, equipment and methods for use by highway maintenance crews.</p> <p>Since getting under way in 2004, Clear Roads has grown to include 34 member agencies, each contributing \$25,000 annually to fund research and technology transfer efforts. Representatives from the participating departments of transportation meet twice a year to discuss and prioritize projects, share effective practices, and review research results.</p> <p>Primary Activities:</p> <ul style="list-style-type: none">• Evaluating winter maintenance materials, equipment and methods under real-world conditions.• Developing specifications and recommendations.• Studying and promoting innovative techniques and technologies that will save agencies money, improve safety and increase efficiency.• Supporting technology transfer by developing practical field guides and training curriculum to promote the results of research projects. <p>Click here to learn more about the Clear Roads Group.</p>	<p><u>Pacific Northwest Snowfighters (PNS)</u></p> <p>Clear Roads partners with the Pacific Northwest Snowfighters (PNS) to coordinate materials testing and standards for deicing chemicals by supporting the maintenance of their Qualified Product List (QPL).</p> <p>PNS is an association of transportation agencies dedicated to ensuring the safety of winter maintenance products through structured testing and evaluation. The group established procedures for testing deicing and anti-icing chemicals and maintains specifications that these products must meet to be considered for widespread use. PNS has become a nationally recognized leader in establishing and standardizing chemical products for snow and ice control.</p> <p>The specifications developed by PNS help guide transportation agencies around the country in the selection of chemical products for winter maintenance applications. Products selected for inclusion on the PNS QPL must meet the following criteria:</p> <ul style="list-style-type: none">• Pass a series of tests for friction, corrosion, and chemical and toxicological properties• Meet environmental and health standards. <p>Click here to learn more about PNS.</p>
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Member states of the Clear Roads Group

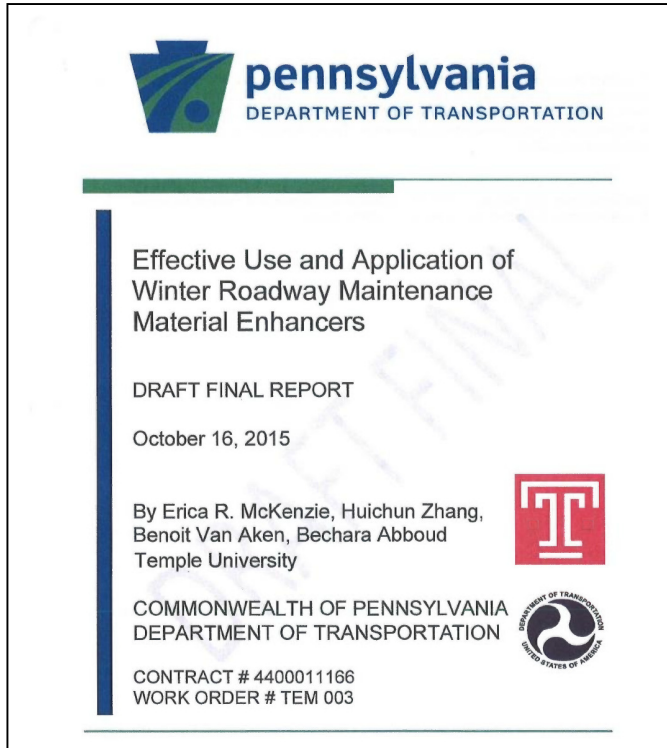
Three independent studies were conducted for Ohio and Pennsylvania

Study conducted by Montana State University (Western Transportation Institute) for Ohio Department of Transportation (ODOT) – December 28, 2013

<p style="text-align: center;">Evaluation and Analysis of Liquid Deicers for Winter Highway Maintenance Operations</p> <div style="display: flex; justify-content: space-around;">  </div> <p style="text-align: right; font-size: small;"><i>Prepared by:</i> Xianming Shi, Michelle Akin, Jiang Huang, Yan Zhang, Scott Jungwirth, Yida Fang, Anburaj Muthumani, Ping Yi</p> <p style="text-align: right; font-size: small;"><i>Prepared for:</i> Western Transportation Institute Montana State University Bozeman, MT</p> <p style="text-align: right; font-size: small;"><i>December 28, 2013</i></p> <p style="text-align: right; font-size: small;"><i>Final Report</i></p> 	<ul style="list-style-type: none"> • “Study conducted to compare liquid deicers that work best in Ohio.” • “The products must rank high in cost-effectiveness, minimal environmental impact, low corrosiveness, melting capacity, material compatibility, and availability.” • “Compared with traditional methods for snow and ice control, anti-icing leads to (1) decreased applications of chemicals and abrasives, (2) decreased maintenance costs, (3) improved level of service, and (4) lower accident rates.” • Idaho case study – years of anti-icing with liquid MgCl₂ on U.S. Highway 12: 1) reduced accidents by 83 percent; 2) abrasive use by 83 percent, and 3) labor hours by 62 percent. • Minnesota DOT – used a mixture of MgCl₂ and brine for anti-icing resulting in: 1) reduction of accidents, 2) rapid bare lane regain times, and 3) less deicer usage.
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<u>For relatively high traffic volume roads under light snowfall</u>	<u>For low traffic volume roads under light snowfall:</u>	<u>For relatively high traffic volume roads under heavy snowfall –</u>
<ul style="list-style-type: none"> ○ Pavement temperature 15°F -20°F: <ul style="list-style-type: none"> ▪ Anti-ice using salt brine at 20-30 gln/l-mi or Product C at 40-60 gln/l-mi; or Anti-ice using Product A (AquaSalina™) at 30-50 gln/l-mi if less plowing is planned. ▪ De-ice using salt brine at 30-60 gln/l-mi or AquaSalina™ at 20 gln/l-mi; or De-ice using AquaSalina™ at 35-70 gln/l-mi if less plowing is planned. ○ Pavement temperature 25°F – 30°F: <ul style="list-style-type: none"> ▪ Anti-icing using salt brine at 20-40 gln/l-mi or AquaSalina™ at 23-46 gln/l-mi; <p>De-ice using salt brine or B20-SB80 at 20-30 gln/l-mi.</p>	<ul style="list-style-type: none"> ○ Pavement temperature 15°F - 20°F: <ul style="list-style-type: none"> ▪ Anti-ice using AquaSalina™ at 30-50 gln/l-mi; ▪ De-ice using AquaSalina™ at 35-70 gln/l-mi; ○ Pavement temperature 25°F – 30°F: <ul style="list-style-type: none"> ▪ Anti-icing using I25-SB75 at 20-30 gln/l-mi; ▪ De-ice using salt brine at 20-30 gln/l-mi. 	<ul style="list-style-type: none"> ○ Pavement temperature 15°F - 20°F: <ul style="list-style-type: none"> ▪ Plow frequently while giving sufficient time for deicer to work after its application; ▪ De-ice using AquaSalina™ at 70 gln/l-mi or salt-brine-pretwet-salt at 16 gal/ton and 400 to 650 lb/l-mi. ○ Pavement temperature 25°F – 30°F: <ul style="list-style-type: none"> ▪ Plow frequently while giving sufficient time for deicer to work after its application; ▪ De-ice using Product-C-pretwet-salt at 8 gal/ton and 250 to 350 lb/l-mi.

Study conducted by Temple University for the Pennsylvania Department of Transportation (Penn DOT) – October 16, 2015




- “A study was conducted to evaluate the product performance and potential environmental effects of five (5) winter maintenance additives: salt – reference (as brine or rock salt), **AquaSalina™**, BEET HEET, Green Blast, and Magic Minus Zero.”
- “The top three performers, based on product performance, were as follows: 1) **AquaSalina™**, 2) GreenBlast, 3) Magic Minus Zero.”
- “Freezing point testing of all deicers solutions indicates that the two liquid deicers, **AquaSalina™** and GreenBlast, have lower freezing points than salt brine of the same concentration, and thus, will have better anti-icing ability than salt brine, while BEET HEET and Magic Minus Zero were similar to rock salt.”

- “When evaluating the performance of all deicers based on both deicing and anti-icing, AquaSalina always has the best performance and BEET HEET always has the worst performance”
- “In general, it can be said that *direct* environmental effects (water quality and toxicity) associated with the five tested deicers are expected to be minimal”
- “In Scenario 1 when deicing and anti-freezing are equally weighted, the ranking of the deicers is AquaSalina = GreenBlast > Magic Minus Zero > rock salt = salt brine > BEET HEET.”
- “In Scenario 2 when deicing is more valued, the ranking of deicers is AquaSalina > Magic Minus Zero > GreenBlast = rock salt = salt brine > BEET HEET.”
- “In Scenario 3 when anti-icing is more valued, the ranking of the deicers is AquaSalina > GreenBlast > Magic Minus Zero > rock salt = salt brine > BEET HEET.”


Study Conducted by University of Akron for the Ohio Department of Transportation – September 1, 2017

Evaluation and Analysis of Liquid Deicers for Winter Maintenance



Prepared by:
William H. Schneider
Teresa J. Cutright
Mallory J. Crow
Andrew Pelfrey

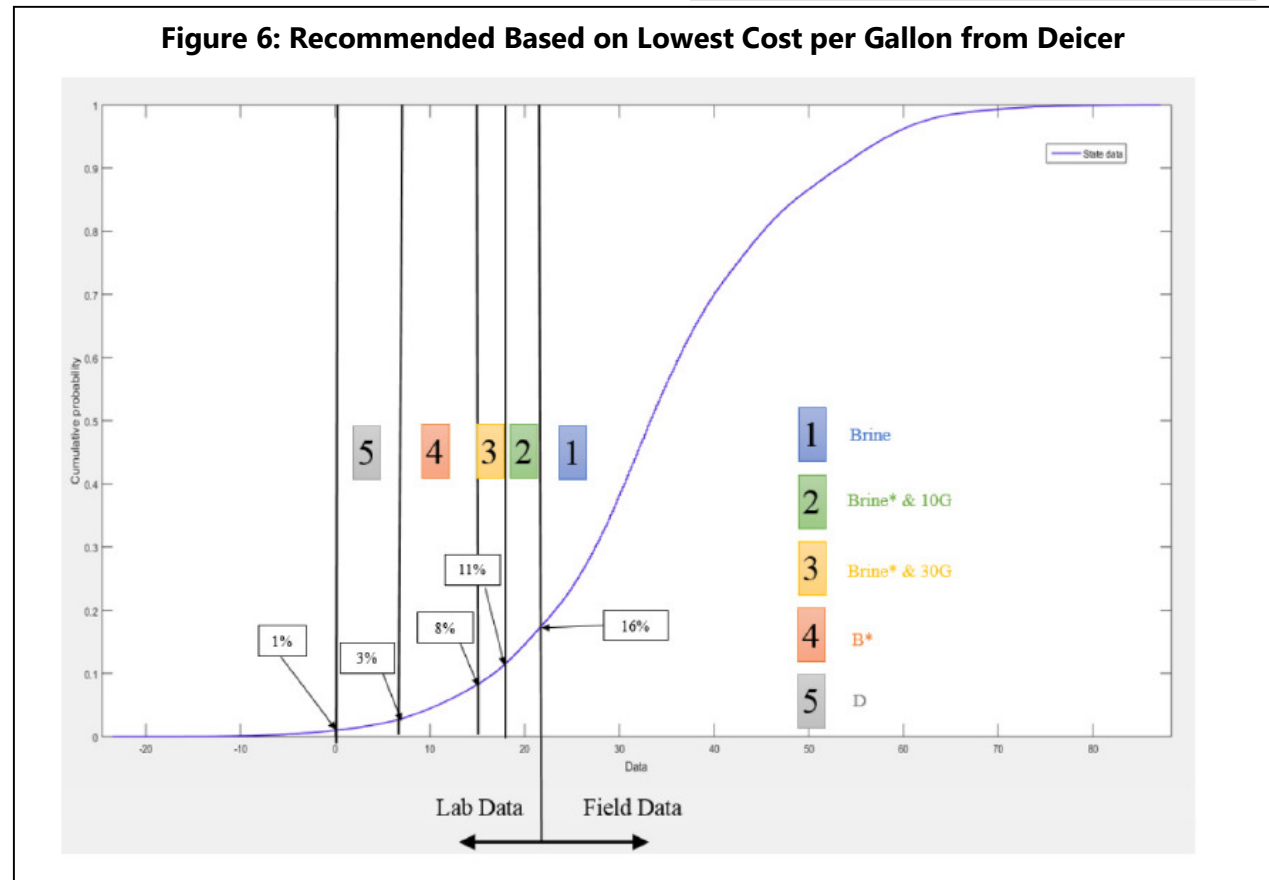
Prepared for:
The Ohio Department of Transportation,
Office of Statewide Planning & Research
State Job Number: 134933
September 1, 2017
Report



- Deicer Key**
- **Deicer A – AquaSalina (AQ)**
 - Deicer B – XO Melt 2
 - Deicer C – BeetHeat Severe
 - **Deicer D – AQ + Icebyte**
 - Deicer E – IceBan 305
 - Deicer F – BeetHeat Concentrate
 - Deicer G – Themapoint 793
 - Deicer H – Cryotech CF7
 - Control - Brine

Based on performance and then cost, brine is recommended for temperatures $\geq 21^{\circ}\text{F}$. Brine performed fair (not good) from 15°F to 21°F . **Deicer D** is the best for temperatures between 0°F to 7.5°F . Note See Figure 5 and 6 below for more details.

Figure 6: Recommended Based on Lowest Cost per Gallon from Deicer



The Ohio Department of Transportation (ODOT) is responsible for constructing and maintaining Ohio’s most valuable man-made asset, the transportation network. Ohio has 21 interstates which is the 5th most of any state, is the 5th in total vehicle miles traveled, and is a single day’s drive from 60% of the nation’s population (ODOT Annual Report, 2016). Therefore, keeping these roadways clear during snow and ice events is essential for public safety as well as the national economy. In order to obtain clear roadways, ODOT spent approximately \$86 million annually on labor, equipment, and materials (ODOT, 2013).

The snow and ice that may accumulate on the roadways form a layer between the tires and road surface, which results in decreased traction. There are two primary methods for snow and ice control, mechanical removal and chemical removal. Mechanical removal consists of using snow plows to push the snow off the roadways, and is not the focus of this research. Chemical removal is done by adding certain chemicals, such as calcium chloride, which will react with the snow and ice to melt the snow, and then the liquid will easily run-off the road. Chemical removal may be done with solid, rock salt or liquid deicers or anti-icing chemicals.

Liquid deicers are used as effective techniques of snow and ice control. They make the plowing of snow and ice accumulation efficient. Plowing is more difficult when the snow or ice adheres to the pavement forming a bond (Penn and Meyerson, 1992). Bonding of the snow and ice to the pavement causes a decrease in traction between the tires of the passing vehicles and the road itself. Deicing is the act of breaking the bond once it has formed. Anti-icing, the newer of the two processes, is used to prevent the bond from occurring. These two techniques are widely favored in the snow and ice control industry. Though these liquids may be used for either techniques. These chemicals will be referred to as deicers in this report. In recent years, winter maintenance crews are testing various types of liquid deicers to assist in snow and ice control. These deicing liquids help prevent or remove the accumulation of the snow or ice when applied to roadways. Deicers help ensure sufficient traction of tires on the road to keep drivers feel safe in maintaining the posted speed limit.

With the growing popularity of liquid deicers, the market has become overwhelmed with different solutions and the efficiency of the deicers is not always certain. The criteria for the evaluation of the deicers include minimal environmental impact, low corrosiveness, high melting capacity, high longevity, and compatibility with equipment and materials. The evaluation process is not always simple. Some of the evaluations are easier to perform than others. There are laboratory studies for these assessments, but they require translation to the real-world application. From the results of a literature review and controlled field-testing, live field tests needed to be conducted to allow for accurate and realistic comparison of deicers.

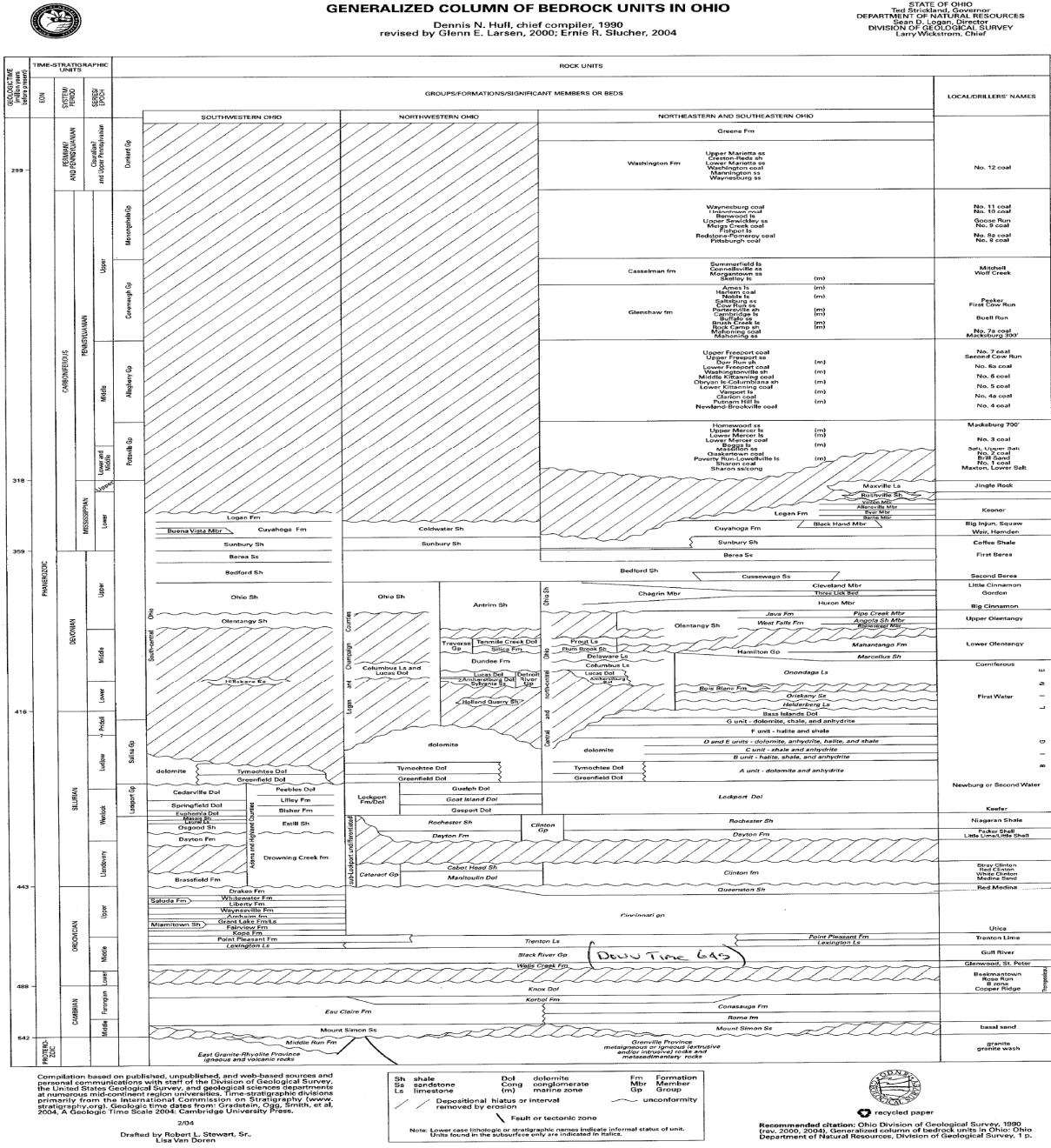
As shown in Table 2.3, once the temperature drops below 15°F, rock salt and brine are not recommended at all without additives. When the temperature falls below 15°F, salt begins to lose effectiveness (Delapaz, et al. 2015). The inefficient uses of salt have led to an increased effort by winter maintenance teams to implement alternative liquid deicers. Brine is the most frequently used liquid by maintenance crews (Shi and Akin, 2010), amidst numerous commercial products. Brine, similar to rock salt, has reportedly been less effective at lower temperatures and may be corrosive to maintenance equipment and surrounding infrastructure (Clear Roads, 2015). Therefore, maintenance teams have explored liquid alternatives.

A combination of liquids and rock salt may be used for snow and ice control. Some maintenance crews apply deicers to the roads before the storm. This practice is called pre-wetting. Pre-wetting is a technique that uses a liquid chemical, deicer, to wet salt as it is being spread onto the road surface (TAC, 2013). Pre-wetting is commonly used to improve road conditions and keep material on the pavement by reducing the bouncing, blowing, and sliding of the salt (TAC, 2013). Shi and O’Keefe reference a study by the Transportation Association of Canada in 2004 that established pre-wetted rock salt retained at a rate of 96% when applied along the centerline compared to only 70% of dry rock salt (Shi and O’Keefe, 2005). However, this report focuses on direct liquid application (DLA). This form of application has many benefits including fast improvement of LOS, reduced application rates, reduced loss of material, prevention of bonding, and reduced corrosion effects (Peterson, 2010). The reduced corrosion effect reported by Peterson is derived from the dilution of the products where the granular chemicals are more concentrated (Peterson, 2010).

Background Information – Duck Creek Energy/Nature's Own/AquaSalina™

Early start is important for snow and ice control. Operations that utilize anti-icing before a storm hits may be up to ten times less expensive than those that do not (ODOT, 2011). The anti-icing, or pre-treating, of roads helps prevent bonding, or even hard-packing, in extreme cases, of snow and ice to pavement, which allows for easy removal and economical use of rock salt. When hard-packing occurs, more efforts either chemically or mechanically are required which results in more material and time by the agency. When no bond is formed to a road, plowing it is much more effective than if it is formed.

Traditional vertical oil & gas wells DO NOT produce the same byproduct (raw brine) or concerns like “frack” water using chemical additives from deeper horizontal wells.





Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR

Division of Mineral Resources Management
Michael L. Sponsler, Chief
2045 Morse Road, Bldg. H3
Columbus, OH 43229-6693
Phone: (614) 265-6633 Fax: (614) 265-7998

ORDER BY THE CHIEF

ORDER NO. 2004-82

TO: Duck Creek Energy, Inc.
7033 Mill Road
Brecksville OH 44141

RE: APPROVAL OF A NEW METHOD FOR BRINE DISPOSAL

The Chief of the Division of Mineral Resources Management ("Division") having given due consideration to the matter contained herein makes the following Findings and issues the following Orders:

FINDINGS

- 1) On March 8, 2004, the Division of Mineral Resources Management (Division) received a request from Chester Wilcox & Saxbe, L.L.P., on the behalf of Duck Creek Energy, Inc. for the approval of its product, AquaSalina™ as a new technology for disposal of brine.
- 2) AquaSalina™ is a saline product derived from brine produced at oil and gas wells.
- 3) Duck Creek Energy's process removes free oil and dissolved volatile organic compounds from the produced brine resulting in a saltwater liquid called AquaSalina™.
- 4) Based upon an evaluation of an analysis submitted to the Division, the concentration of metals (barium) and volatile organic compounds satisfy U.S. EPA Maximum Contaminant Levels for public drinking water.
- 5) Unlike untreated produced brine, AquaSalina™ is a commodity, not a waste product for which users of AquaSalina™ will be charged a fee. The recommended spreading rate for AquaSalina™ is less than the maximum allowable spreading rate currently allowed by Section 1509.226(B)(5) of the Ohio Revised Code for raw brine. When spread at the recommended-rate, AquaSalina™ will not cause, or cannot reasonably be anticipated to cause water consumed by humans or domestic animals to exceed the standards of the Safe Drinking Water Act or result in damage or injury to public health, safety or the environment.

ORDERS

- 1) Pursuant to Section 1509.22(C)(1) of the Ohio Revised Code (O.R.C.), the Division of Mineral Resources Management hereby conditionally approves the use of AquaSalina™ as a new technology for disposal of brine for de-icing road surfaces, or dust control, use in port-a-john restrooms, or other product applications so approved by the Division from time to time. Surface application of AquaSalina™ is exempt from compliance with Section 1509.226(A-F, H and I) of the O.R.C.
- 2) AquaSalina™ will only be transported and spread from Duck Creek Energy, Inc.'s processing facility with vehicles that are exempt under O.R.C. 1509.226(G) and that are not used for transportation of oilfield brine or other chemicals or substances that may be hazardous to public health or safety or by other dedicated vehicles that are not used for transportation of oilfield brine or other chemicals or substances that may be hazardous to public health or safety. Pursuant to 1509.226(G) because the disposal of AquaSalina™ under this Order is a new technology, such dedicated vehicles are exempt from the registration, disposal plan and surety bond requirements under 1509.222, 223 and 225 of the Ohio Revised Code.
- 3) Each entity which transports AquaSalina™ must legibly identify all vehicles used in the transportation thereof with reflective paint in letters no less than four inches (4") in height, indicating the words "Brine" and "AquaSalina™".
- 4) In order to minimize the concentration of barium, AquaSalina™ must be made only from raw production brine produced from reservoirs below the top of the Onondaga Limestone, including, but not limited to, the Oriskany Sandstone, Newburg Dolomite and Clinton Sandstone. AquaSalina™ cannot be derived from raw brine originating from drilling, completion stimulation, or treatment operations.
- 5) The exemptions set forth in condition one of this Order shall only apply to AquaSalina™ and not to the raw brine transported to Duck Creek Energy, Inc.'s processing facility. Raw brine must be transported to Duck Creek's processing facility by a registered brine hauler subject to the requirements of 1509.222, 1509.223 and 1905.225 of the Ohio Revised Code.
- 6) On or before the fifteenth day of April of each year, Duck Creek Energy, Inc. shall file an annual report with the Division for the previous calendar year. The report shall include at least the following information: Volume of raw brine transported to the facility by each individual registered brine hauler, the oil and gas well sources for the raw brine, including County and the API permit number, and the name and UIC brine hauler registration number for each hauler.
- 7) AquaSalina™ must meet U.S. E.P.A. Maximum Contaminant Level standards for Barium and Volatile Organic Compounds including Benzene, Ethyl benzene, Toluene, and Xylene (BETX).

- 8) Annually, Duck Creek Energy, Inc. will provide test results to the Division verifying that the processed AquaSalina™ meets all applicable standards. The sample will be analyzed by a laboratory certified by the Ohio Environmental Protection Agency for the following parameters: Inorganics (chloride), Metals (barium, calcium, iron, magnesium, and sodium), and BTEX. The analysis must be submitted by April 15th of each year along with the Annual Report required by condition number six.
- 9) The Division may at any time collect samples of AquaSalina™ for independent testing and analysis.
- 10) In the event that test results of AquaSalina™ submitted by Duck Creek, or generated as a result of the Division's independent testing and analysis, raise concerns on the part of the Division that AquaSalina™ does not comply with the requirements of condition number seven of this Order, upon notification by the Division, Duck Creek shall immediately cease distribution of AquaSalina™.
- 11) Distribution ceased pursuant to condition number ten shall not recommence until such time as Duck Creek, at its own expense, has submitted to the Division, additional test results by a laboratory certified by the Ohio Environmental Protection Agency verifying that AquaSalina™ complies with the requirements of condition number seven. The Division shall give authorization to recommence such distribution within five days of the receipt of such test results.
- 12) Due to this Order being issued under O.R.C. 1509.22(C)(1) for testing or implementing of a new technology or method of disposal, this Order shall be in effect for 365 days after the date of issuance. If Duck Creek wishes an extension of this Order, it shall submit a request for an extension to the Chief of the Division by October 1, 2005.

October 22, 2004

Issue Date

Scott R. Kell for

MICHAEL L. SPONSLER, Chief
Division of Mineral Resources Management

ORDER NO. 2004-82
Duck Creek Energy, Inc.
Page 4

Addressee will be afforded an informal hearing, if requested, pursuant to Section 1509.06 of the Ohio Revised Code. If an informal hearing is desired, contact Michael L. Sponsler, Chief, Division of Mineral Resources Management, at (614) 265-6893.

Addressee is hereby notified that this action is final and effective and may be appealed to the Oil and Gas Commission pursuant to Section 1509.36 of the Ohio Revised Code. The appeal must be in writing and must set forth the Orders complained of and the grounds upon which the appeal is based. Such appeal must be filed with Benita S. Kahn, Secretary, Oil and Gas Commission, c/o Vorys, Sater, Seymour & Pease, 52 Gay Street, P.O. Box 1008, Columbus, Ohio 43216, within thirty (30) days after receipt of this Order.

In addition, notice of the filing of the appeal must be filed with Michael L. Sponsler, Chief, Division of Mineral Resources Management, 2045 Morse Road, Bldg H-2, Columbus, OH 43229-6693, within three (3) days after the appeal is filed with the Oil and Gas Commission.

Cc: Tom Tomastik, Geologist
Ray Studer, ODNR Attorney General
Dave Hodges, Geology Program Supervisor
Scott Kell, Deputy Chief
Tom Tugend, Deputy Chief
Rick Simmers, North Region Manager
Dave Clark, South Region Manager
Bill Boyle, West Region Manager
Duck Creek Energy, Inc. Brine Hauler File

Certified Mail Receipt No. 7000 0600 0027 4728 5590



Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR

DAVID MUSTINE, DIRECTOR

February 10, 2011

Mr. Dave Mansbery
Duck Creek Energy, Inc.
7033 Mill Road
Brecksville, Ohio 44141

Dear Mr. Mansbery:

Pursuant to our telephone conversation on February 9, 2011, below is the excerpt from the Administrative Order 2004-82 issued to Duck Creek Energy, Inc. on October 22, 2004.

- Pursuant to Section 1509.22 (C) (1) of the Ohio Revised Code, the Division of Mineral Resources Management (Division) hereby conditionally approves the use of AquaSalina as a new technology for disposal of brine for de-icing road surfaces, or dust control, use in port-a-john restrooms, or other product applications so approved by the Division from time to time. Surface application of AquaSalina is exempt from compliance with Section 1509.226 (A-F, H and I) of the Ohio Revised Code.
- This exemption means that AquaSalina can be applied to road surfaces without obtaining a resolution from the county and does not have to adhere to the nine guidelines required for the spreading of untreated oilfield brine under Section 1509.226 (B) of the Ohio Revised Code.

If you have any further questions regarding this matter, please feel free to contact me at (614) 265-1032.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Tomastik".

Tom Tomastik, Geologist 4
Division of Mineral Resources Management
2045 Morse Road, H-3
Columbus, Ohio 43229-6693

Cc: File

EVALUATION AND ANALYSIS OF LIQUID DEICERS FOR WINTER MAINTENANCE

BACKGROUND

The single largest cost item in the maintenance budget for the Ohio Department of Transportation (ODOT) is snow and ice control. ODOT utilizes mechanical and chemical methods to combat ice and snow from gathering on the roadways, which creates unsafe driving conditions. This research focuses on evaluating chemically removing ice and snow through the use of liquid deicers. There are a plethora of liquid deicers commercially available. ODOT's Boston Heights garage along with Chardon Township will work with the research team to test these liquid deicers under various traffic and weather conditions. Figure 1 presents field testing on a no volume road. In addition to reviewing the performance of these deicers in the field, lab testing will be conducted to study the behavior of the deicers in a controlled environment. Figure 2 presents the methodology for the ice melting capacity test conducted in the lab.

KEY FEATURES AND APPLICATIONS

1. Traffic is a key role in the performance of the deicers.
2. Deicers have performed well when road temperatures are nearing 0°F. Normally ODOT would not apply any liquid deicers for the fear of freezing.
3. All deicers performed similar in the field under the weather conditions observed.
4. Based on performance and then cost, brine is recommended for temperatures $\geq 21^\circ\text{F}$. Brine performed fair (not good) from 15°F to 21°F. Deicer D is the best for temperatures between 0°F to 7.5°F. Note See Figure 5 and 6 below for more details.

RESEARCH CONTEXT

The objectives of this project are to:

- Determine the deicers that are compatible with ODOT's equipment and materials with the highest melting capacity,
- Conduct lab and field tests to evaluate deicers under various temperature, environmental, and roadway conditions,
- Recommend deicers for various conditions that based on cost, ice melting capacity, longevity, compatibility and availability, and
- Evaluate the feasibility of implementation for liquid deicers.



Figure 1: Field Testing on a No Volume Road Section.

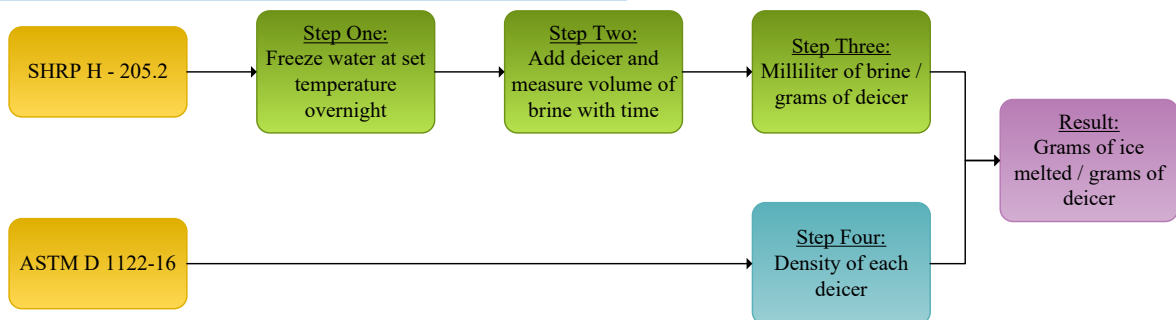


Figure 2: Ice Melting Capacity Lab Test Procedure.

EVALUATION AND ANALYSIS OF LIQUID DEICERS FOR WINTER MAINTENANCE

RESEARCH APPROACH

The study began with parking lot tests and there was little to no effect from any deicers proving that traffic is needed. The study progressed to a low volume road, and then a medium volume road. Deicers are applied to zones with 0.5 miles between each deicer to avoid contamination from traffic. Figure 3 presents the two application systems built for this research. Friction and road temperature measurements are taken of each zone over time till deicers are no longer functioning. Figure 4 presents the road temperature and visual comparison data. Figure 5 presents the friction data. The next phase is moving to medium volume roads.

Three lab test were performed: ice melting (SHRP H 205.2), ice penetration (SHRP H 205.3), and freezing point (ASTM D1177-12). All test were ran with the pure deicers and with a mixed (brine and deicer) solutions as well. Ice melting and penetration were conducted at 0°F, 15°F, and 25°F. Ice melting was conducted at 18°F and 7.5°F for a few deicers and blends as well.

RESEARCH FINDINGS AND RECOMMENDATIONS

Field testing has shown that the mixing of deicers by traffic is key to the individual deicers success. For the most realistic results the deicers should be evaluated under the most similar circumstances. The average temperature observed in the field is 21°F there are two events when temperature are 20°F however, all the deicers and brine failed at the same rate due to the amount of snowfall. Therefore, recommendation for $\geq 21^\circ\text{F}$ are based on field data while recommendations for 0°F to 21°F are based on the lab data.

Figure 5 and 6 presents the historical temperature data for the state of Ohio. As seen there is a 1% chance the temperatures are below 0°F. Figure 5 presents all the deicers and deicer blends (brine and deicer mixed) that performed well in that temperature range. Figure 6 presents the recommended one based on cost per gallon.



Figure 3: Application Systems (left is for no volume and right is form low/medium volume application)

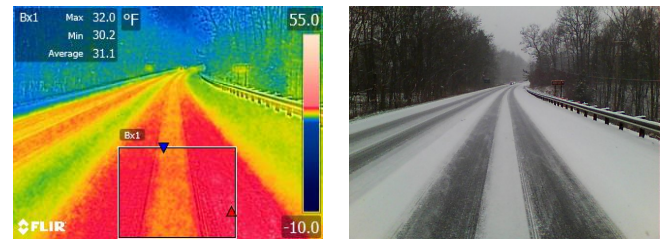


Figure 4: Images Taken During Field Test.

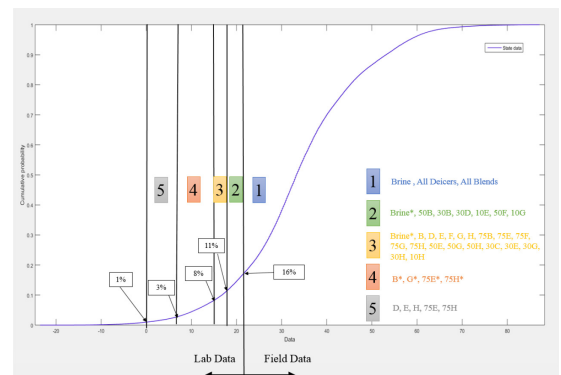


Figure 5: Results from Lab and Field.

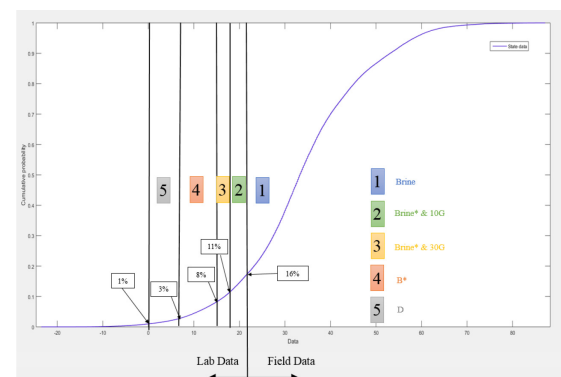


Figure 6: Recommended Based on Lowest Cost per Gallon from Deicer in Figure 5.

Nature's Own Source, LLC

AquaSalina®
Liquid Deicer & Dust Suppressant

AquaSalina+®
Corrosion Inhibited Liquid Deicer & Dust Suppressant
PNS-QPL Listed Product

NO



YES



JUST LOAD AND GO!

AquaSalina® Products

NO Capital ~ **NO** Labor ~ **NO** Maintenance
LOWER Temperature Range ~ **LOWER** Total Cost
Environmentally Friendly

AQ+IceBite

Corrosion Inhibited Liquid Deicer & Salt Activator
PNS-QPL Listed Product

7033 Mill Road
Brecksville, OH 44141

440.838.5135

www.naturesownsource.com

AquaSalina[®] a natural saltwater solution originating from ancient seas. It replaces manufactured salt brine, and calcium and magnesium chloride solutions.

AquaSalina+[®] corrosion inhibited *AquaSalina*[®] (PNS Approved and QPL Listed)

AquaSalina[®] and *AquaSalina+*[®] Both products are used effectively for deicing or anti-icing, and have a certified freeze point of -15°F, unlike manufactured salt brine whose freeze point is -6°F. Safely apply to road surfaces, or pre-wetting rock salt. Filtered to 5 micron thus, no plugging of nozzles, no freezing of salt into blocks at the spinner, and no unpleasant odor or stickiness. **Just Load and Go!**

- 1 ½ times more ice melting capacity than manufactured salt brine
- Requires NO capital expenditures for brine makers
- Requires NO rock salt - Pre-treat reduces rock salt consumption 30%
- Requires NO chemical additions or mixing - **Just Load and Go!**
- Requires NO maintenance - Filtered to 5 micron
- Environmentally friendly - Adds to the water cycle - Why foul freshwater to make brine?
- Economically replaces manufactured salt brine, and calcium and magnesium chloride solutions
- Anti-ice, and pre-treat salt, grit, and #9 limestone
- Pre-treat secondaries - prevents snow pack, easier clean-up - Buys time for mains
- Has **70% less corrosive effect than manufactured salt brine**
- Top Performer in the December 28, 2013 Western Transportation Institute at Montana State University Final Report **"If one desires to reduce the need for plowing, then de-ice using Product A (AquaSalina)..."**

NEW AQ+IceBite

- Combines *AquaSalina+*[®] with Ice Bite[®] (85/15%)
- Reduce bounce and scatter - Good retention on road
- Premixed - **Just Load and Go!**
- PNS certified freeze point at -11°F
- Environmentally friendly - Renewable beet addition to re-purposed saltwater
- **70% less corrosive than manufactured salt brine**
- **The ONLY combined brine and beet corrosion inhibited product meeting PNS Specifications and QPL Listed**

All naturally contain calcium, sodium, magnesium and potassium chlorides, resulting in lower freeze points and better resistance to dilution than manufactured salt brine.

TESTIMONIALS:

Chardon Township, Ohio: "The product performed great burning ice away from the pavement at a pavement temperature of -5°F and an ambient air temperature of -10°F."

City of Green, Ohio: "We have had great success with *AquaSalina*. When we experienced the below zero temperatures, the product performed without freezing while using it down to -9°F."

Nature's Own Source, LLC * 7033 Mill Road * Brecksville, OH 44141 * 440.838.5135 * www.naturesownsource.com
Plants and Terminals: Cleveland, OH Mogadore, OH

Patent Pending 04/2015

**News Clips
Highlighting
ODOT's Districts Use
of AquaSalina
Around Ohio**

Winter strikes back as Stella dumps snow across the northeast

The Wellington Enterprise

3.14.2017

By Jonathan Delozier - jdelozier@civitasmedia.com

Just when Lorain County thought spring was near, Winter Storm Stella made its way into the area Monday night, cancelled classes, and caused parking bans and travel warnings.

On the East Coast, the storm-turned-blizzard was expected to drop up to 20 inches of snow on parts of Baltimore, Philadelphia, New York, and Boston.

We stopped by the Ohio Department of Transportation's District III office in Oberlin to see how a largely mild season has treated its drivers. You might think less snow equals less work for ODOT, but switching between warm and cold weather equipment can actually be more difficult to deal with than a sustained, snowy winter.

"We're ready anytime," said transportation manager Steve Jacoscik as he readied trucks heading out to salt and plow roads. "It's harder for us to predict what to do. When it's snowing every day, we know what to do and how to handle it. When it's 70 degrees in February and then in the teens in March, things get difficult."

ODOT deploys 15 trucks in Lorain County and has used 10,834 tons of salt annually over the past six years. In 2016, that total was down to just 7,925 tons. The district's cache can hold up to 6,000 tons.

Additives are mixed with the salt to create moisture, with the temperature outside determining which of three choices are used.

Aqua Salina is for extremely cold conditions in the teens and lower. A combination of brine and beet juice is used for temperatures from 20 to 25 degrees, and brine is used by itself for 25 degrees and warmer.

"When we're not dealing with snow and ice, we're doing a lot," said ODOT public information officer Crystal Neelon. "That can mean clearing out ditches or any number of things. We change tailgates

on the truck when temperatures switch, so getting back to the snow equipment can be difficult after a two-week break like we've had."

Drivers usually work 12-hour shifts, but in extreme weather events, those can sometimes extend to 16.

Neelon encouraged travelers to give ODOT's drivers of space and watch for "wings," which are pieces added to the sides of trucks to create a wider plow.

"We see a lot of drivers try to pass our trucks," she said. "They don't realize how fast conditions can change. You may be on dry pavement right now, but ice can pop up at any time and just a little ways up the road could be whiteout conditions. Our drivers deal with people in a hurry all the time. People even pass on the shoulders and drive into our wings. Our drivers take on an extreme responsibility."

Amherst street department foreman Jeff Barnes said clearing roadways, for the most part, went off without a hitch for his workers.

"I thought this storm would have a little more to it," he said. "We did some routine salting, put the plows on, and got everything cleaned up. All the equipment held up very well. We've been able to get out and do a lot of street patching this year because of the lack of snow."

In Wellington, 11-year-old Devan Diedrick used his day off from McCormick Middle School to help out his neighbors on Grand Avenue by shoveling off the sidewalk.

"I woke up at 4 a.m. to have breakfast with my dad," he said. "When it's snowy, I see people jogging or riding a bike because they don't have a car and I just wanted to help them. I'm planning on doing it next time too."

Jonathan Delozier can be reached at 440-647-3171 or @DelozierNews on Twitter.

Lack of winter weather events saves ODOT \$360,000

Saturday, January 09, 2016 12:33 AM



BY NANCY SPENCER

pDHI Media Editor

info@timesbulletin.com

VAN WERT - What a difference a year can make. Ohio Department of Transportation District 1 has released its report on winter operations for October to the present compared to the same time period last year spending \$75,000 less in parts for equipment and \$285,000 less in fuel for snow and ice operations. According to District 1 Public Information Officer Rhonda Peas, this equates to a savings which would fund a bridge replacement or a paving project.

"To date, there have been four weather events which required crews to respond versus 12 events by this same time last year," Peas said. "The worst winter in recent memory in terms of cost was last winter with \$8.7 million expended in District 1 for snow and ice control."

In Allen County, crews maintained 474 lane miles and used 296 tons of salt and 4,530 gallons of deicing liquids since Oct. 1 and drove 7,166 miles for snow and ice removal. The total cost for labor, equipment and materials was \$21,204.

Putnam County crews maintained 422 lane miles and used 214 tons of salt and 1,384 gallons of deicing liquids. More than 8,250 miles were driven for snow and ice control.

In Van Wert County, crews maintained 375 lane miles using 247 tons of salt and 11,662 gallons of deicing liquids, driving 5,212 miles for winter weather events.

Paulding County crews covered 393 lane miles with 345 tons of salt and 1,384 gallons of deicing liquids. A total of 7,543 miles were driven for snow and ice control.

District 1 covers 3,356 lane miles and 47,019 miles were driven for snow and ice control since October compared to 222,593 miles last year at this time.

Total tons of salt used at this time in 2015 was 10,755 compared to 1,729 this year and crews used 149,922 gallons of liquid de-icer last year versus 61,312 this year.

District totals so far this year are \$130,392 versus \$300,296 last year.

Statewide, ODOT has used 25,835 tons of salt to this point; the lowest statewide salt usage since 2006. In a typical winter, ODOT District 1 will incur \$4.1 million in costs for snow and ice operations. Liquid de-icers include salt brine as well as the following: Beet Heet, a sugar beet, molasses-based product that increases rock salt's ice melting capacity below its 15-degree limit; Aqua Salina, a natural saltwater with a lower freeze point than regular brine; and Boost, an organic substance that when added to calcium chloride reduces the corrosiveness of calcium chloride and improves its anti-icing and de-icing capability. These products are more effective at controlling icy conditions versus just straight salt or salt brine and can be more cost effective.

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On the road with an ODOT snow plow driver

Updated Dec 17, 2016; Posted Dec 17, 2016

By **Ginger Christ, The Plain Dealer**

gchrist@plaind.com

CLEVELAND, Ohio - Rich Deszcz doesn't expect to get off any of the holidays. He works 12-hour shifts for weeks on end throughout the winter months.

But he doesn't mind.

"This is where we make our money," said Deszcz.

Deszcz is part of the Ohio Department of Transportation's snow plow crew. Day in and day out, he gets behind the wheel of the massive ODOT plow and clears the roads for other motorists.

His job doesn't take a break for holidays. On those days, instead he makes sure the highways are safe for those headed out to celebrate.

"There is no planning. You miss holidays and family events," said Deszcz, who used to be a private plow driver before coming to work at ODOT. "We basically plan on working the holidays and, if we get off, it's a bonus."

He and his coworkers are prepared to report in to work whenever the forecast calls for bad weather. And in Northeast Ohio, they stay busy.

The Macedonia resident works out of ODOT's Independence garage, a small site off I-77 packed with plows, pickup trucks and dome-shaped salt storage buildings.

Each day, he and the other drivers gather in the office for the morning tailgate, seated around a long table dotted with holidays cookies and takeout coffee cups. Here the night shift drivers hand over responsibility of the roads to the day shift.

"This event yesterday was a shock to everyone," said Bill Gajewski, transportation manager, on the morning after the area got hit by 8 inches of snow and unseasonably cold temperatures. "It totally blew everyone's mind. You guys did an incredible job."

Gajewski consulted a weather report to give drivers updates on the possibility for more snow and ice and warned them all to expect to work 12-hour shifts through at least the end of the weekend.

"Everybody be safe," he said, after calling out road assignments.

Deszcz typically covers the stretch of I-480 between West 150th Street and Granger Road. Sometimes though, when Cuyahoga County shifts drivers to Lake County to handle lake effect snow, his route extends up to Harvard Avenue to make up for the missing plows.



ODOT borrowing plows from other counties to battle the Northeast Ohio snow globe

The local ODOT office has borrowed plows from other counties to help clear the roads.

"We go to where the storm is," said George Holloway, ODOT's Cuyahoga County manager.

That's the fun part.

"It makes the day go quickly," said Deszcz, who is on ODOT's tree crew in the summer months.

On snowy days, the job is clear. Deszcz and a team of two other drivers head to the same stretch of I-480. Two plow the highway, while the other keeps the ramps clear.

"When the snow is bad, we're pretty much told, 'Stick together, and don't leave each other's side,'" Deszcz said. "It's a challenge, trying to make the roads safe for everyone."

The hardest part isn't clearing the roads though; it's being aware of other people on the road, he said.

Too often, Deszcz sees cars cut him off, follow too closely or pass on the side of the road that he's plowing, a dangerous move because of the shifting snow.

"You have to be cautious," Deszcz said. "It's really defensive driving."

And when he sees accidents, Deszcz calls them in to the office, where someone notifies the local authorities. The accidents, he said, are the worst part of the job, and he sees entirely too many in his line of work.

"Car crashes are the ugliest thing," Deszcz said.

Thus, he remains vigilant on the roads. Surprises lurk under snow and harbor unknown dangers. In moving snow, drivers could unearth almost anything, most often car parts.

"You never know what's going to happen with these things," Deszcz said.

While most of his coworkers power through the 12-hour shifts with coffee, Deszcz instead turns to Coke. On this morning, he sips it from a plastic McDonald's cup.

"That's my coffee," Deszcz admitted.

Most days, he brings supplies for the whole day - lunch, a drink and snacks. When the weather is the worst, drivers only have time to refuel and restock their salting supplies before heading back out on the road.

During the most recent storm, when traffic could only travel at 15 mph because of hard pack snow - firmly-packed snow - he only was able to make three runs of his route in the time he normally can make six or seven. On those days, drivers sometimes will stagger plows in a line to try to clear as many lanes as possible to allow traffic to get through faster.

But on other days, like this day, when the threat of a snow storm is imminent but hasn't yet hit, Deszcz follows his route and prepares the roads. He pushes snow off the berms; applies brine or AquaSalina - a saltwater with a lower freezing point; and makes sure the roads are ready so that when the snow does fall, they will be safe.

The Van Wert Independent, 1.15.2018

Mild winter lowers snow removal costs

DAVE MOSIER/*independent editor*

Area residents know it's a mild winter when the Ohio Department of Transportation's District 1 has only spent about a third of what it did last year on snow and ice removal.



An Ohio Department of Transportation snowplow at work clearing off District 1 roadways.
(ODOT photo)

ODOT's District 1 has spent \$130,392 so far this year on snow and ice removal, compared to \$300,296 in 2014-15. District 1 has spent \$75,00 less in parts and \$285,000 less in fuel for snow and ice operations, compared to this same point last year, which equates to savings that would fund a bridge replacement or highway paving project.

To date, ODOT District 1 Deputy Director Kirk Slusher notes that there have been just four weather events that ODOT crews have responded to, versus 12 events by this time last year. Last year was the worst winter in recent memory, with a total of \$8.7 million spent in District 1 for snow and ice removal. The average for such spending is \$4.1 million.

Statewide, ODOT has used 25,835 tons of salt so far this year, which is the lowest salt usage since 2006.

Nearly half of the money spent on snow and ice removal has gone to purchase deicing liquids, with \$61,312 spent on that category, which includes Beet Heet, a sugar beet, molasses-based product that increases rock salt's capacity below its 15-degree limit; Aqua Salina, a natural saltwater with a lower freeze point than regular brine; and Boost, an organic substance that, when added to calcium chloride, reduces the corrosiveness of that chemical substance, while also improving its anti-icing and deicing capability.

Van Wert County has spent \$22,463 so far this year on snow and ice removal — the second highest total — including 11,662 gallons of deicing liquids. Hancock County has spent the most so far this year, \$31,336, while Allen County is third with a total of \$21,204.

ODOT District 1 comprises eight counties, including Van Wert, Allen, Defiance, Hancock, Hardin, Paulding, Putnam, and Wyandot.

Plows ready to clear streets

New products on tap; salt supply steady for winter

- The Morning Journal (Lorain, OH)
- 27 Nov 2017
- By Richard Payerchin

Lorain's road supervisors say they are ready for the snow when it flies this winter season.

City mechanics and drivers have prepared the trucks for plow duty in late fall and winter as 2017 ends and 2018 begins, said Lori Garcia, director of the city's Public Property Department, and Mike Darnos, the street superintendent.

Weather happens and the amounts of rain, snow and ice determine how the city responds.

"Every storm is different," Darnos said.

Top priority

The Public Property Department has a 30-page manual to guide workers and supervisors in their efforts to keep streets clear of snow and ice.

Arterial streets are the top priority for city workers to plow. Secondary streets are a secondary priority.

Side streets and cul de sacs are the third tier. When those areas are cleared, the city drivers turn their attention to alleys and parking lots, the fourth priority area for plowing.

The city manual and the list of streets to be salted both are posted at www.cityoflorain.org.

How to plow

When the plows go over the roads, residents are not necessarily going to see clean concrete.

The Ohio Department of Transportation uses a policy to create wet pavement, Darnos said.

People think that can apply to every roadway, Darnos said, but Lorain uses that standard for main streets and secondary streets.

"But when you get into the side streets and people see that there is snow on their street, ice packed snow or anything like that, they say their streets are not done," Darnos said.

In the city, many resident complaints arise because

Lorain plows side streets but does not salt them, Garcia said.

"Why I think we get the complaints is because the side streets, we do not salt them," Garcia said. "We plow them but it will not go down to concrete. So people see snow on it and they instantly call and tell us, 'you didn't plow my street.'"

Residents say, "the street's not done," Darnos said.

"Right, it is done," Garcia "It's not going to be concrete."

Salt and plows

The city salt storage dome at the garage holds 1,100 tons while the city salt dome on Oak Point Road will hold about 1,400 tons.

Both are full and Lorain can order up to 3,500 tons of salt for the 2017-18 season, Garcia said.

Last winter, Lorain crews used about 3,100 tons to spread on streets or make brine. That is a lot of salt but was lower than the city winter average of 5,500 to 6,000 tons, Garcia said.

It may seem counterintuitive, but the light dustings of snow sometimes cause city crews to use more salt than heavy snowfall. The light snowfall may melt and refreeze, creating ice and requiring more treating. For a heavy snowfall, city crews can pretreat a road then plow off the snow, Garcia said.

The Public Property Department fleet has 16 five-ton plow trucks. The city has two 10-ton tandem-axle trucks with wing plows that sit on the sides of the trucks to clear multiple lanes.

There are three 1-ton trucks and three working crew leaders have pickup trucks with plows.

The tandem trucks have implements to wet the salt when it comes of the spinner that spreads it over the roads.

Wetting the salt activates it to react with ice and to stay in place, so crews can be more efficient spreading it.

"Wet salt, where it drops, it stays," Garcia said. "Dry salt scatters all over."

Four of the trucks are outfitted with tanks and spray bars to wet roads with brine, which city workers mix with water and rock salt at the garage.

New methods

This year Lorain crews will try AquaSalina, a mixture of water with salt, calcium chloride, magnesium chloride and potassium chloride. The added chemicals give the mixture a lower freezing point than just salt water, which helps prevent formation of ice on the roads, according to Nature's Own Source, the company that mixes the product.

Lorain also will try another new product called "Aquaphalt" for pothole repairs, Garcia said.

Roadstone Production bills it as a "permanent, environmentally friendly asphalt patch." The product uses an "eco-friendly binder" and hardens when wet, according to the maker.

The company guarantees the patch to last up to three years, Garcia said.

"It's always worth a try," Darnos said.

How to help

The city staffers offered two reminders to Lorain residents.

During heavy snowfall, the Lorain mayor or designee may declare a snow emergency. A parking ban prohibits on-street parking for residents who have driveways or other offstreet parking.

When city plow crews are out Lorain police will ticket or tow cars on the street.

"The more snow we get, the more important it is that they try to stay out of our way," Darnos said. "Our guys are pretty good at what they do and it just makes their lives a little bit easier if there are clear paths up and down the streets."

Drivers should be patient. Those who want to pass plows or beat them through intersections are creating hazardous situations for themselves and the city workers, Darnos said.

"Just be cautious of our guys," he said.

ODOT, Lake County officials plan for another round of snow

Posted 5:22 pm, December 29, 2017, by [Adrienne DiPiazza](#)
Fox 8 Cleveland

PAINESVILLE, Ohio-- Lake effect snow warnings are in effect for Ashtabula, Lake and Geauga counties as Ohioans head into the last weekend of 2017.

Ohio Department of Transportation crews will work around the clock through the storm to try and keep up with the storm throughout Northeast Ohio. In District 12, which includes Lake, Geauga and Cuyahoga counties, there will be 80 plows on the road.

Trucks filled up with salt and the tanks were topped off with liquid calcium at the ODOT salt dome off Interstate 90 in Lake County Friday morning.

ODOT reminds drivers to take it slow and give their trucks extra room to clear the roads. Lake County's engineers are also out keeping tabs on roads that may be particularly treacherous or icy.

They have already closed Vrooman Road in Painesville Township because of its steep hill.

"It just isn't worth it," said Sandy Ponsart, who lives near the closed road. "I mean people don't understand you're not just fooling around with you're own life, but you could be fooling around with somebody else's."

Ponsart has lived near the road for more than 20 years and said every year countless people who think they can brave the hill get stuck and have to get towed out.

State Snowplows Are Ready To Hit The Road

10.25.17

NBC4

COLUMBUS (WCMH) — As temperatures drop, roads can quickly become hazardous, but state officials said they are ready for the battle with ice and snow.

NBC4 met up with a snowplow driver at their Westerville facility as he and others went over last minute preparations to make sure their trucks are ready for the winter season.

Even though the Ohio Department of Transportation snowplows are huge, white in color, and well-lit with dozens of flashing neon lights, officials said that doesn't guarantee other drivers will see them or give them a wide berth.

Plow driver Prother Cole said he can handle the long hours and likes the work, but worries other drivers don't take weather conditions as serious as he does. Here are some tips he said can keep him and you safe while driving near a snowplow.

“Do not tailgate, stay as many feet back as possible. Be careful while passing, especially on the sides, because sometimes we may be pushing snow in that direction and cannot see you. Don't crowd the plow.”

District 6 has 166 snowplows and 201 drivers covering nearly 5,000 lane miles.

If the weather becomes more severe in one district, ODOT District 6 Spokesperson Nancy Burton said they will move snowplows from one district to another to help out. Their deputy director said they also have several options when combating ice and snow depending on what weather conditions are developing.

“In addition to salt we also have salt brine, we have liquid calcium, we have Beet Heat and we have a product called Aqua Salina so we use all those products in conjunction with the salt,” said District 6 Deputy Director Mitch Blackford.

He said there is an abundant supply of salt this year, and last year's mild winter helped keep the prices reasonable.

In 2016 snowplow drivers locally traveled 501,707 miles removing ice and snow. And the cost for the district, which encompasses eight surrounding counties, was \$6 million.

The Daily Record 1.10.17

Winter drives annual ODOT readiness event

Bobby Warren, The-Daily-Record.com

WOOSTER — Old man winter is on his way, just ask the workers at the Ohio Department of Transportation's Wayne County garage who participated in the annual winter readiness inspections Thursday morning.

The core function of the inspections is to make sure the trucks and equipment ODOT drivers use are safe to operate and will keep the state's roads passable for the public "when the snow flies," said Jason Sutherland, transportation administrator for District 3's Wayne County operations on Geyers Chapel Road.

The drivers lined up their vehicles in a procession of trucks and had to pass through two checkpoints. The first one was to ensure they had all the necessary accessories in the cab of the truck. The second was to make sure there were no leaks in the engine or hoses, the plow blades were operational, the lights (strobe, turn indicators, parking, rear and brake) were in good working order, the dump bed and salt spreader operated properly, and there were no structural issues with the vehicle and rims. In all, each truck went through a 120-point safety inspection.

About 5,000 tons sit in storage at ODOT's Wayne County garage in Wooster. Drivers are expected to use about 15,000 tons this winter season.

ODOT drivers line up their trucks at the Wayne County garage for the annual winter safety inspection.

Jason Mudra checks under an ODOT truck to make sure there are no leaks in any of the lines.

During the process, potential issues are noted. Following the inspection, the mechanics and managers meet to discuss what needs to be done. "We immediately remedy the problems and make corrections," Sutherland said.

The Wayne County garage has about 5,000 tons of salt in storage, and Transportation Manager Todd Nyhart said he expects a total of 15,000 tons will be used this winter. The thinking is this will be an "average" winter.

Long-term forecasts are nice, but what really matter are the "two-day out" forecasts, Sutherland said.

The salt, which costs \$33 a ton this winter, down from a recent high of more than \$100 per ton, is mixed with a brine made at the garage. The salt water liquid helps the rock salt activate quicker, and it is used when temperatures are 15 degrees or higher. When the temperature dips below 15 degrees, drivers use AquaSalina, a mixture of sodium chlorporide, calcium chloride, magnesium chloride and potassium chloride. It has a lower

freezing point, -15 degrees. Both are environment-friendly, Sutherland said. AquaSalina also contains a corrosion inhibitor.

The Wayne County garage typically operates on two winter shifts: One from 6 a.m.-2 p.m., and the other from 6 p.m.-2 a.m. However, that all changes when it's snowing — drivers are on 12-hour shifts.

Transportation Manager Lance McGinty has been with ODOT for about 30 years. In the past, drivers would work 16-hour days during snowstorms. “We knew what we were signing up for,” he said. However, the 12-hour shifts are much better on the drivers and gives them more time with their families.

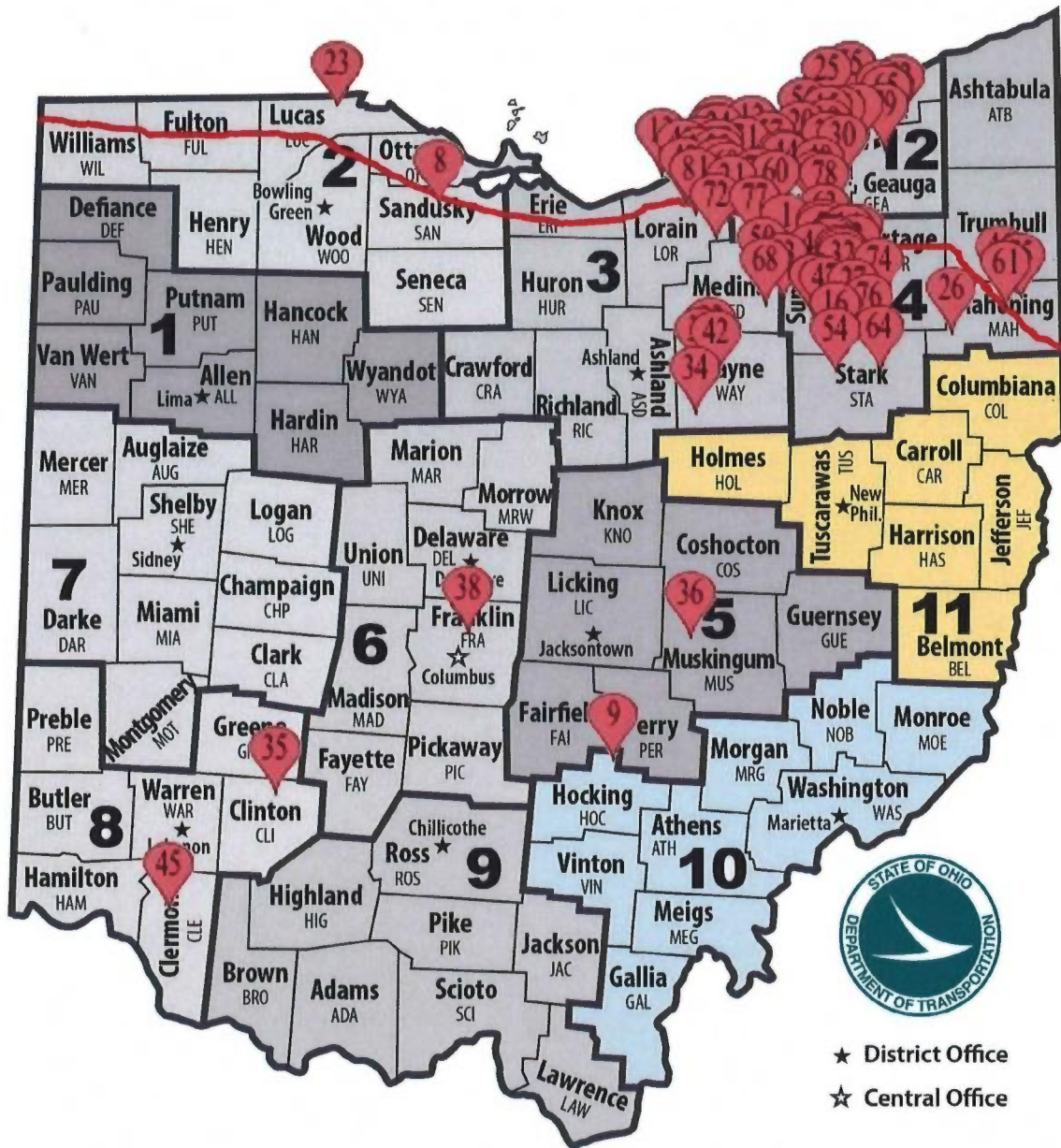
Because it takes more people to operate 12-hour shifts, ODOT uses seasonal help, Sutherland said.

Sutherland invited the Wayne County Emergency Management Agency staff — Director Joe Villegas, Planner Barb Pittard and Specialist James Howard — to tour the garage and see how the inspection process works.

“I think (the winter readiness inspection) is a very good thing to share with the public,” Villegas said. “It shows how they are putting in a lot of time for safety,” and not only for the public, but the drivers, too.

While talking about the average winter anticipated, Villegas talked about the possibility of working collaboratively to share weather information. EMA uses the National Weather Service and receives alerts from AEP Ohio. Each are useful, but they have different focal points. Villegas said it might be useful to share weather reports.

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★ District Office
☆ Central Office

District 1	Hardin County
District 2	Seneca, Ottawa, Wood, Fulton Counties
District 3	Ashland, Crawford, Erie, Huron, Lorain, Medina, Richland, Wayne Counties
District 4	Ashtabula, Mahoning, Portage, Summit, Trumbull Counties
District 5	Fairfield, Licking, Guernsey, Muskingum Counties
District 6	Morrow County
District 7	Shelby County
District 8	Clermont, Clinton, Green, Hamilton, Preble, Montgomery, Warren Counties
District 9	Brown, Highland Counties
District 12	Cuyahoga County