west virginia department of environmental protection

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MEMORANDUM

To: Division of Highway

From: Division of Environmental Protection SBM

Date: 07/30/2010

Subject: WVDOH/WVDEP Salt Brine from Gas Wells Agreement

WVDOH/WVDEP Salt Brine from Gas Wells Agreement

This agreement by and between the **West Virginia Division of Highways** and the **West Virginia Department of Environmental Protection** is limited to the beneficial use of natural gas well brines within the state of West Virginia for roadway prewetting (brine mixed with rock salt and rock salt/abrasive mixes prior to roadway application), anti-icing (brine applied directly to roadway surfaces prior to precipitation), and deicing (brine applied to roadway surfaces during and after the precipitation event). The approved use is limited to the wintertime application of natural gas well brines in order to minimize the formation of bonded snow and ice to roadway surfaces by utilizing the melting capabilities of salt brine.

Only natural gas well brines which meet the following criteria will be used for prewetting, anti-icing, and deicing purposes:

Parameter	Allowable Level
TDS	>200,000 mg/L
Chloride	<175,000 mg/L
Sodium	*<91,500 mg/L
Calcium	*
pH	5.5 to 8.0
Iron	<10 mg/L
Barium	<2 mg/L
Lead	<10 mg/L
Oil & Grease	<10 mg/L
Benzene	<0.5 mg/L
Ethylbenzene	<0.7 mg/L

Toluene	<1 mg/L
Xylene	<1 mg/L

*The total of Chloride, Sodium, and Calcium shall be a minimum of 200,000 mg/L with Sodium making up no more than 91,500 mg/L. With Sodium concentrations above 91,500 mg/L, the freezing temperature of the brine actually increases.

**All natural salt brine received shall have a freezing point of less than 0 degrees Fahrenheit.

The application rates for natural gas well brines shall be limited to 10 gallons per ton for prewetting use, 50 gallons per lane mile for anti-icing use, and 100 gallons per lane mile for roadway deicing.

Natural gas well brines managed under this agreement shall not be mixed with other types of solid wastes, including hazardous waste, municipal waste, other residual waste, special handling waste, or regulated radioactive waste.

Nothing in this agreement shall be construed to supersede, amend, or authorize a violation of any of the provisions of any valid and applicable local law, ordinance, or regulation.

The activities authorized by this agreement shall not harm or present a threat of harm to the health, safety, or welfare to people or the environment. The terms of this agreement will be modified or suspended to prevent harm to the public health or environment or if brines cannot be regulated under the condition of this agreement.

Facilities and equipment used for the storage of natural gas well brines shall be maintained in good operating condition. All storage tanks, secondary containment systems, and transfer lines shall be set up and operated in a manner that prevents spills, leaks, or other releases.

Personnel shall be properly trained and educated on the implementation of prewetting, anti-icing, and deicing applications. The training must consist of a working knowledge of the application rates specified in this agreement and an understanding of the equipment used to mix or apply the brine to the roadway. Only personnel which have received adequate training shall be permitted to use natural salt brine under this agreement.

Due to the potential for groundwater contamination resulting from the prewetting of storage piles, the brine shall only be applied to material just prior to roadway application.

Each source of brine used for roadway prewetting, anti-icing, and deicing purposes shall be analyzed for all the criteria listed in this agreement prior to any application of gas well brine. The freezing point of the brine must be determined. Only gas well brine with a freezing point below 0 degrees F will be acceptable.

For each new source of natural gas well brine, an analysis of the criteria listed in this agreement shall be submitted to the WVDEP for approval.