

COMMONWEALTH OF MASSACHUSETTS MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD OPERATING PROCEDURES		S.O.P.NO. HMD-01-01-1-000		PAGE 1 OF 16	
SUBJECT: POLICY FOR REDUCED SALT AREAS IN THE VICINITY OF WATER SUPPLIES			DISTRIBUTION: Statewide		
EFFECTIVE 4/1/2008	ISSUED		APPROVED Signature on Original		

PURPOSE

To establish reduced salt zones for the purpose of minimizing sodium and chloride effects on an industrial or potable water supply. To clearly identify and delineate the limits of each reduced salt zone in each district, as well as identify the materials and application rates to be used.

RESPONSIBILITY

The District Highway Director (DHD) is directly responsible for maintaining this policy and ensuring that the procedures outlined are followed. The operation and maintenance of reduced salt zones requires increased material expenditures due to the use of calcium chloride and/ or salt-sand mixes, as well as the cost for increased supervision and sand disposal. All locations shall be closely supervised during all storm events. The District shall be responsible for ensuring that chemicals for the reduced salt zones are available, and that the maps are distributed in a timely manner to appropriate personnel including privatized forces for increased awareness.

NOTE: In order to maintain public safety and at the direction of the Chief Engineer or his designee, one or more applications of straight Salt, Pre-Mix or 50/50 may be applied at 240 lbs. per lane mile.

The Snow & Ice Materials Usage Committee (S&IMUC) shall make recommendations for the addition, deletion or modification of reduced salt zones. Reduced salt zones shall only be established based on scientific data as required by SOP, ENV-01-30-1-000. The failure of a municipality or public water supplier to provide the regular monitoring data as required by the aforementioned SOP to demonstrate the effectiveness of the reduced salt zone may be grounds for MassHighway to discontinue treating the corresponding section of highway as a reduced salt zone.

DEFINITIONS

Salt or Sodium Chloride is the primary deicer utilized by the Massachusetts Highway Department due to its chemical deicing properties and cost effectiveness; at 24⁰-32⁰ F. Applied at 240 lbs per lane mile, salt is the most cost effective and best deicer available. It is a crystal that has to become a liquid or brine in order to work effectively. Salt transforms into brine with the addition of heat, moisture and time.

Pre-wetted Salt is sodium chloride sprayed with Liquid Calcium Chloride 32%. The application rate is 8-10 gallons per ton of salt. Best utilized by spraying on salt from 30⁰ F and below, and on the first application. The act of pre-wetting serves several functions: it reduces bounce and scatter, and accelerates the salt going from a solid to solution or brine.

Liquid Calcium Chloride (LCC) 32% is a deicing solution utilized by MassHighway because of its quick melting action. The chemical properties make it ideal for low temperatures (-60⁰ F) by lowering the effective working range of salt to +/- 10⁰ F. It is Hygroscopic; which means it attracts moisture from the air as well as the ground, thus making it the perfect deicer to jump start the salt in the creation of a brine. It is used for pre-wetting salt or direct application pre-treatment.

Pre-mix is a combination of Sodium Chloride and Flake Calcium Chloride (Solid). The ratio of the two products is 4:1, 80% Sodium Chloride and 20% Calcium Chloride. This combination is used in some of the reduced salt zones in combination with sand.

50/50 Mix is a 1:1 mixture of sand with a deicing material. The deicing material may be salt or pre-mix. This material is not the most effective deicer but is used in reduced salt zones to reduce sodium and chlorides into the environment. This mixture is sometimes used during sleet or freezing rain events.

Liquid Magnesium Chloride 30% a corrosion inhibited deicing agent. A blend of magnesium chloride 30% and an environmentally friendly (Amine) additive creating a blended chemical 70% less corrosive than conventional deicers. Utilized for Pre-treating of roads or Pre-wetting of sodium chloride. Used now for evaluation on I-95 North in the Boxford reduced salt zone.

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DEFINITIONS CONTINUED

Pre-treatment a proactive strategy designed to prevent a bond between the snow and ice and road surface. This is achieved by the direct application of liquid. The typical application rate is between 20-30 gallons per lane mile. Pre-treatment is normally done on pavement temperatures of between 15-30⁰F.

Sand: A clean inert, hard material free of organic material with no melting capabilities. Sand is intended to increase friction between vehicles and the pavement. The sand may be applied "straight," or it may be mixed with pre-mix on a 1:1 basis. Because of the environmental and economic impact, MassHighway restricts the use of sand in our operations to reduced salt zones and in extremely cold temperatures.

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District I

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D1-01	Private	Becket	Route 8	Carter Road to Washington TL	1	2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D1-02	Private	Cummington	Route 9	From the Dudley Manor Bridge & continuing to the westerly entrance to Cummington Village.	1	3.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D1-03	Private	Goshen	Route 9	From the intersection of Ball Road, continuing easterly to approximately 2,500 feet east of the Whale Inn.	2.4	6.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D1-03	Private	Goshen	Route 112	From the end of town road, northerly to the intersection with Maple Ave.	2.4	6.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 2

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D2-01	Public	Erving	Route 2	From east end of the French King Bridge, easterly to approximately 200 feet prior to the Moore Street overpass.	0.9	3	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-02	Public	Erving	Route 63	From the intersection with Kennedy Road northerly to the intersection of Poplar Mountain Road.	1.7	3.4	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-03	Private	Granby	Route 202	From the Belchertown/Granby TL, westerly to the Granby/South Hadley TL.	7.1	17	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-03	Private	South Hadley	Route 202	From the Granby/South Hadley TL to the intersection with Route 33.	7.1	17	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-04	Private	Orange	Route 2	From approximately 250 feet east of the Orange/Wendell TL to approximately 250 feet west of Route 122, including ramps.	3.1	12.9	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 2

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D2-05	Private	Belchertown	Route 9	From the Belchertown/Pelham TL, southerly, to the intersection of Route 202.	6	13.9	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-06	Private	Belchertown	Route 202	From the intersection of Route 202 & Route 9 northerly, to the Pelham TL.	6	15.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D2-06	Private	Pelham	Route 202	From the Belchertown TL northerly to Kings Road in Pelham.	6	15.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 3

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D3-01A	Public	Auburn	Route 12	From the Oxford TL to the intersection with Route 20, stopping for 1 mile @ the center of town in Auburn, then continuing to the Worcester TL.	14	27.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D3-01B	Public	Oxford	Route 12	From the Oxford center of town northerly to the Auburn TL.	14	27.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D3-02	Public	Boylston	Route 70	From Shrewsbury TL to the Clinton TL.	9	18	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D3-02A	Public	Clinton	Route 70	From the Clinton/Shrewsbury TL to the end of center of town in Clinton.	9	18	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D3-02	Public	Shrewsbury	Route 70	From the Worcester/Shrewsbury TL to the Shrewsbury/Boylston TL.	9	18	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D3-03	Private	Charlton	Route 20	From the intersection of Depot Road, westerly to the junction of Route 169.	1.5	6	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

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Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials		Application Rate
D3-04	Public	West Boylston	Route 12	From the intersection with Central Street, northerly to the summit of Balderellis Hill.	2	5.3	Pre-Mix : Sand (1:1)		240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride		1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride		30 Gal/Ln Mile
D3-05	Private	West Boylston	Route 110	From the intersection with Route 12 to the Clinton TL.	3.5	12.4	Pre-Mix : Sand (1:1)		240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride		1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride		30 Gal/Ln Mile

District 4

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D4-01, A-B	Public	Lincoln	Route 2A	From Hanscomb Dr. in Lincoln to the Lexington TL.	10.1	24.31	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-01, A-B	Public	Lexington	Route 2A	From the Lincoln TL to the Arlington TL, including the 128/2A interchange.	10.1	24.31	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-01, A-B	Public	Arlington	Route 2A	From Lexington TL to Brattle Rd., Arlington.	10.1	24.31	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-02, A-B	Public	Lincoln	Route 2	From Bedford Rd. in Lincoln to Lexington TL.	4.65	32.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-02, A-B	Public	Lexington	Route 2	From Lincoln TL to Pleasant St. in Lexington (Exit 55), including the 128/2 interchange.	4.65	32.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-03, A-F	Public	Lexington Waltham Weston	Route 128	From Route 4/225 (exit 31), to Route 9 (Exit 20), including all interchanges and all related ramps.	24.55	147.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

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D4-04, A	Public	Weston Waltham	Route 20	From the Wayland/Weston TL to Eddy Street, Waltham, including the 128/20 rotary and ramps.	5.6	15.88	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-05, A-C	Public	Chelmsford	Route 3	From Route 129 (Exit 29) to Route 40 (Exit 33) including ramps and feeder lanes.	6.5	39	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-06	Public	Chelmsford	Route 3A Route 4	From the Chelmsford High School to the Chelmsford/Tyngsborough TL.	2.6		Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-07	Public	Lowell Chelmsford	Lowell Connector	From Gorham Street to Route 3, including all ramps.	3		Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-08	Public	Chelmsford Lowell	Route 110	From Fletcher Street, Chelmsford to Industrial Ave., Lowell.	3.8	15.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-09, A-C	Industrial	Lynnfield Peabody	Route 128	From Lowell Street, Peabody (Exit 26) to Salem Street, Lynnfield (Exit 42) and all related ramp systems.			Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-10	Industrial	Lynnfield Peabody Lynn	Route 129	Route From our Lady of Assumption Church in Lynnfield to St Mary's Cemetery in Lynn.	2.9	8.2	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 4

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D4-11	Industrial	Peabody	Route 95	The long ramps connecting Route 95 to Route 128, beginning and ending approximately at the Forest Street overpass.	4.0	10.0	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-12	Industrial	Lynnfield Peabody	Route 1/95 Interchange	Route 1 interchange with Route 95 from the Route 1 Jughandle to and including Goodwin Circle.			Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-13	Public	Andover	Route 93	From Dascomb Road, Tewksbury (Exit 42) to River Road, Andover (Exit 45).	9.7	38.8	Salt : Sand (1:1)	240 lbs/ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-14	Public	Andover	Route 495	From Route 133 (Exit 39) to I-93 (Exit 40), including ramp systems.	4.9	19.6	Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D4-15, A-C	Private	Danvers Topsfield Middleton Boxford Rowley	Route 95	From the Ferncroft Rotary, Danvers (Exit 50) to Route 133, Georgetown (Exit 54).	5.75	45.6	Salt : Sand (1:1)	240 lbs/ln Mile
							Pre-Wet w/ Liquid Magnesium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Magnesium Chloride	30 Gal/Ln Mile

District 5

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D5-01	Public	Avon	Harrison Blvd.	From Route 24 to Route 28.	4	16.8	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-01	Public	Avon	Route 28	From Randolph TL to Route 37.	4	16.8	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-02	Private	Freetown Lakeville Taunton	Route 140	From the junction of Chace Road, (Exit 8) in Freetown, northerly, to the intersection of Route 79 in Taunton (Exit 10).	6.1	38.6	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-03	Private	Freetown Lakeville Taunton	Route 18 & County Road (Old Route 140)	County Road (Old Route 140), starting @ the New Bedford/Freetown TL to Route 79 in Lakeville.	8.3	19.1	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-04	Public	Middleboro	Route 28	From the junction of Route 495 (Exit 3) to the junction of Route 44 rotary (Exit 6).	7.1	21.3	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-05	Public	Middleboro	Route 495	From the interchange of Route 28 to the interchange with Route 44.	7.2	43.9	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

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Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D5-06	Public	North Attleboro	Route 1	From the Attleboro/ North Attleboro TL northerly to the intersection of Route 120, Hoppin Hill Ave., in North Attleboro.	2.5	10	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-07	Public	Attleboro	Route 95	From Route 95 / 295 interchange (Exit 4) extending southerly to & including the Route 123 interchange (Exit 3), except for the ramp from Route 95 North Bound to Route 123 East Bound & the ramp from Route 123 West Bound to Route 95 North Bound.	1.6	14.7	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-08	Public	North Attleboro	Route 295	From and including the interchange @ Route 1 (Exit 1) northerly to Route 95 (Exit 2), including the ramp from Route 295 NB to Route 95 SB and the ramp from Route 95 NB to Route 295 SB.	2.2	18.6	Pre-Mix : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 5

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D5-09, A-B	Public & Private	Bourne Sandwich Barnstable Dennis Harwich Brewster Orleans Eastham Wellfleet Truro Provincetown	Route 6	From Sagamore Bridge, Route 6 in Bourne to Province Land Road, Provincetown.	62.4	277.9	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-10, A-C	Public & Private	Falmouth Bourne	Route 28 (Palmer Ave.)	From the Cape Cod Canal to the end of the State Highway in Falmouth.	13.3	97	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-11	Public	Falmouth	Wood's Hole Road	From the intersection of North Main Street & Route 28 (Palmer Avenue) to Water Street in Falmouth.	7.2	14.5	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 5

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D5-12	Public	Harwich Dennis Yarmouth Barnstable	Route 28	From the junction of Route 132 and Route 28 in Barnstable to the Harwich / Chatham TL.	14.4	43.2	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-13, A-B	Public	Barnstable Mashpee Falmouth	Route 28	From Falmouth Heights Circle in Falmouth to the junction of Route 28 and Route 132 in Barnstable.	19.6	45.08	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-14	Private	Chatam Harwich Orleans	Route 28	From the Harwich / Chatham TL to the Orleans Rotary.	13.8	31.7	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-15	Public	Falmouth Bourne	Route 28A	From the junction of Route 28 (McArthur Blvd.) and Roberta Ave. in Bourne to the junction of Sippewisset Road and Palmer Ave. in Falmouth.	7.9	15.8	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-16	Public	Barnstable Yarmouth Dennis Brewster Orleans	Route 6A	From the junction of Route 6A and Hyannis Road in Barnstable to the junction of Route 6A and Route 28 (Orleans-Chatham Rd.) in Orleans.	19.6	45.1	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-17	Public	Barnstable Sandwich Bourne	Route 6A	From Bourne, at the State Police rotary, to the junction of Route 6A and Old Jail Lane in Barnstable.	16.3	37.5	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile

District 5

Map #	Type of Water Supply	Town	Route	Boundaries	Length (Miles)	Lane Miles	Materials	Application Rate
D5-18	Public	Sandwich	Route 130	From the intersection of Route 6A to approximately 100 feet east of Tupper Road & from the intersection of Shawme Road to 1,000 feet north of Jan Sebastian Way.	3.4	8.8	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-19	Public	Barnstable	Route 132	From the junction of Route 6A and Route 132 to Bearses' Way.	1.8	4.1	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-20	Public	Wareham Plymouth Bourne	Route 25	From Exit 1, to approximately 2,100 feet west of the Bourne Bridge.	7.3	58.4	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile
D5-21, A-E	Public & Private	Martha's Vineyard	Various	State Road (South Road)	12.0	101.4	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
				West Tisbury Road	15.9			
				Upper Main Street in Edgartown	0.5			
				Seaview Avenue	1.0		Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
				Beach Road	5.2			
				New York Avenue	0.9			
				Temahigan Avenue	0.3			
				Eastville Avenue	0.1			
				State Road (North Road)	7.2			
West Basin Road	1.9	Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile					
D5-22	Public & Private	North Truro Provincetown	6A	From the junction of Priest Road, and South Hollow Road in North Truro to the junction of Route 6 and Snail Road in Provincetown.	9.7	22.31	Pre-Mix : Sand (1:1) or Salt : Sand (1:1)	240 lbs/Ln Mile
							Pre-Wet w/ Liquid Calcium Chloride	1 Gal/Ln Mile
							Pre-Treat w/ Liquid Calcium Chloride	30 Gal/Ln Mile