



# Cottage Grove/SWWD Water Consortium

June 1, 2011

# Environmental Concerns

- Once chlorides enter the ground or surface water they never go away.
- Animal species are negatively affected.
- Salinity of soil is increased.
- Water quality is affected.

# Key Elements

- Reduce the amount of material used to deice.
- Reduce amount of sand entering system.
- Reduce impact to environment from chlorides.

# Deicing Equipment

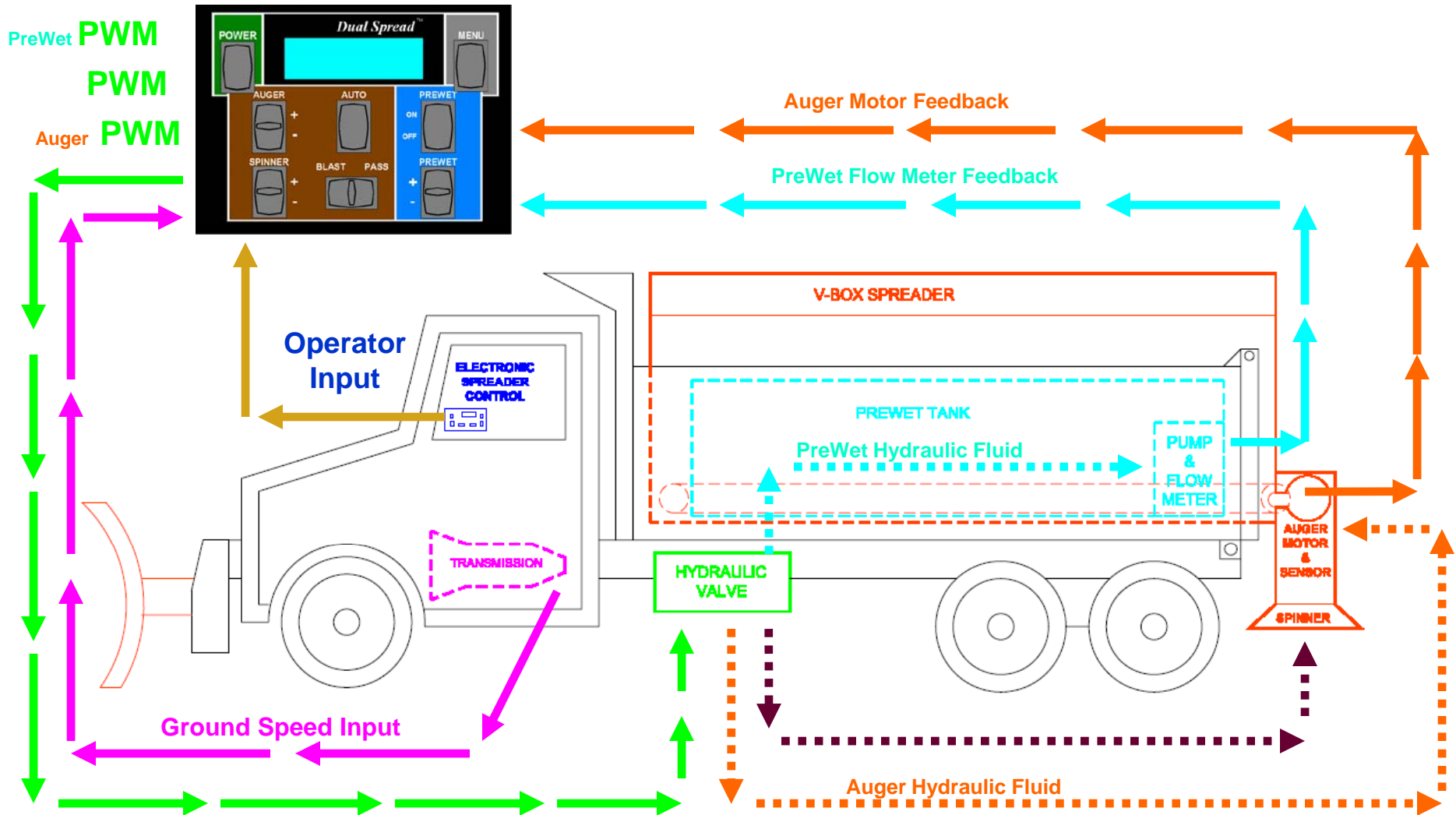


# Calibrated spreading improves performance

- Ground speed oriented, closed loop spreading
- Collect more data and protect what you have
  - ***SpreadSmart Rx™*** controls the process and stores the data;
  - ***DrivebyDownload™*** delivers the data;
  - Use for operator training and supervision
- Savings opportunity – reduce salt runoff into watershed
  - Manual compared to Ground Speed
  - Ground Speed to Temp Response
    - In 2009/2010 a savings of 27% was seen.

# Spreader Overview

- Ground Speed "Oriented"
- Closed "Feedback" Loop



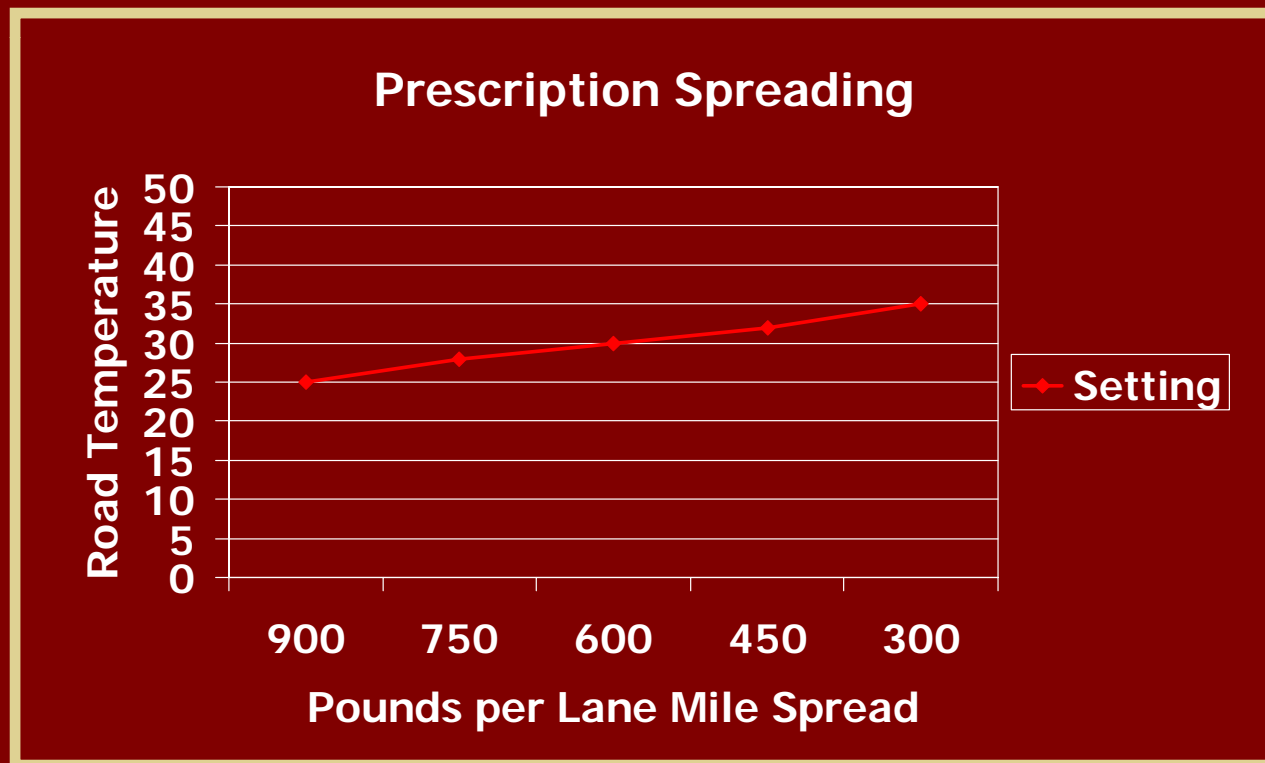
# SpreadSmart Rx™ Controller

- **Temp Response™**
  - Temperature based prescription spreading
- **Records Data**
- **Wireless Download of Spreading Data**
  - *Drive By Download™*
  - GPS Antenna & Logging



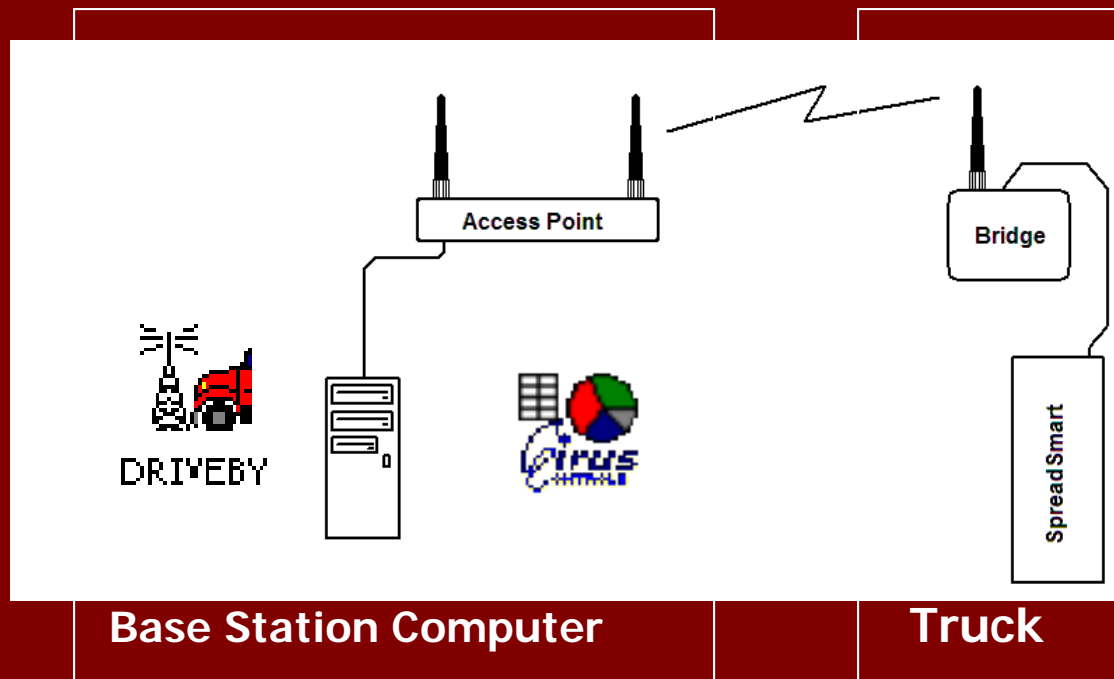
# Temp Response <sup>TM</sup>

- Link the Road Temperature to the Spreading prescription;
- Changes spreading prescription as fast as the system can respond (seconds);
- Lowers overall salt usage



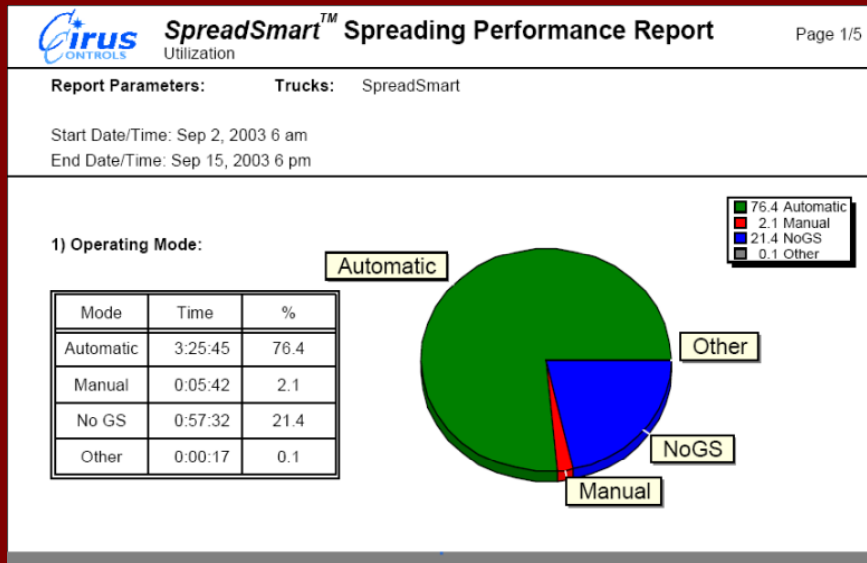
# Drive By Download™ System

250 Foot Range with clear line of sight.....



- Truck can be in motion while within that 250 feet;
- Multiple access points can be added to increase coverage.

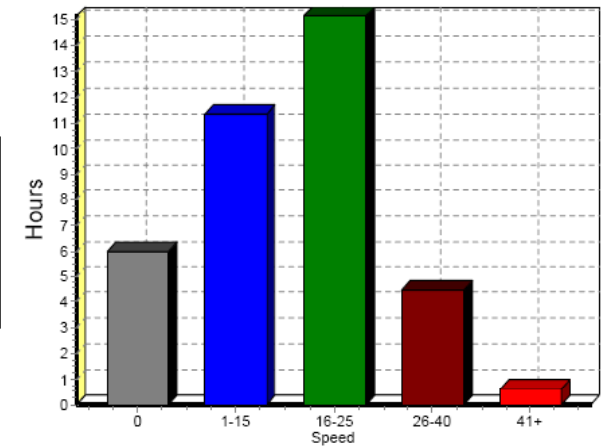
# Spreading Performance Report



### 3) Speed and Distance Report (Automatic Mode Only):

The trucks covered in this report covered 596.9 miles. Average speeds are shown below:

Speed	Time (hrs)	%
0	6.0	15.8
1-15	11.3	30.1
16-25	15.2	40.3
26-40	4.5	11.8
41+	0.6	1.6



# Spreading Performance Report

## 5) Materials Dispensed Report:

Granular Materials:

Material Name	Miles	Time	Pounds	Pounds/Lane Mile
SALT	331.6	26:48:31	159,723	355
SALT A	37.5	5:59:58	17,548	467

Prewet Materials:

Material Name	Miles	Time	Gallons	Gallons/Ton
BRINE	298.9	26:15:57	794	9.0

## 6) Materials Dispensed Report - Combined Common Materials:

Granular Materials:

Material Name	Miles	Time	Pounds	Pounds/Lane Mile
SALT	369.1	32:48:29	177,271	363

Prewet Materials:

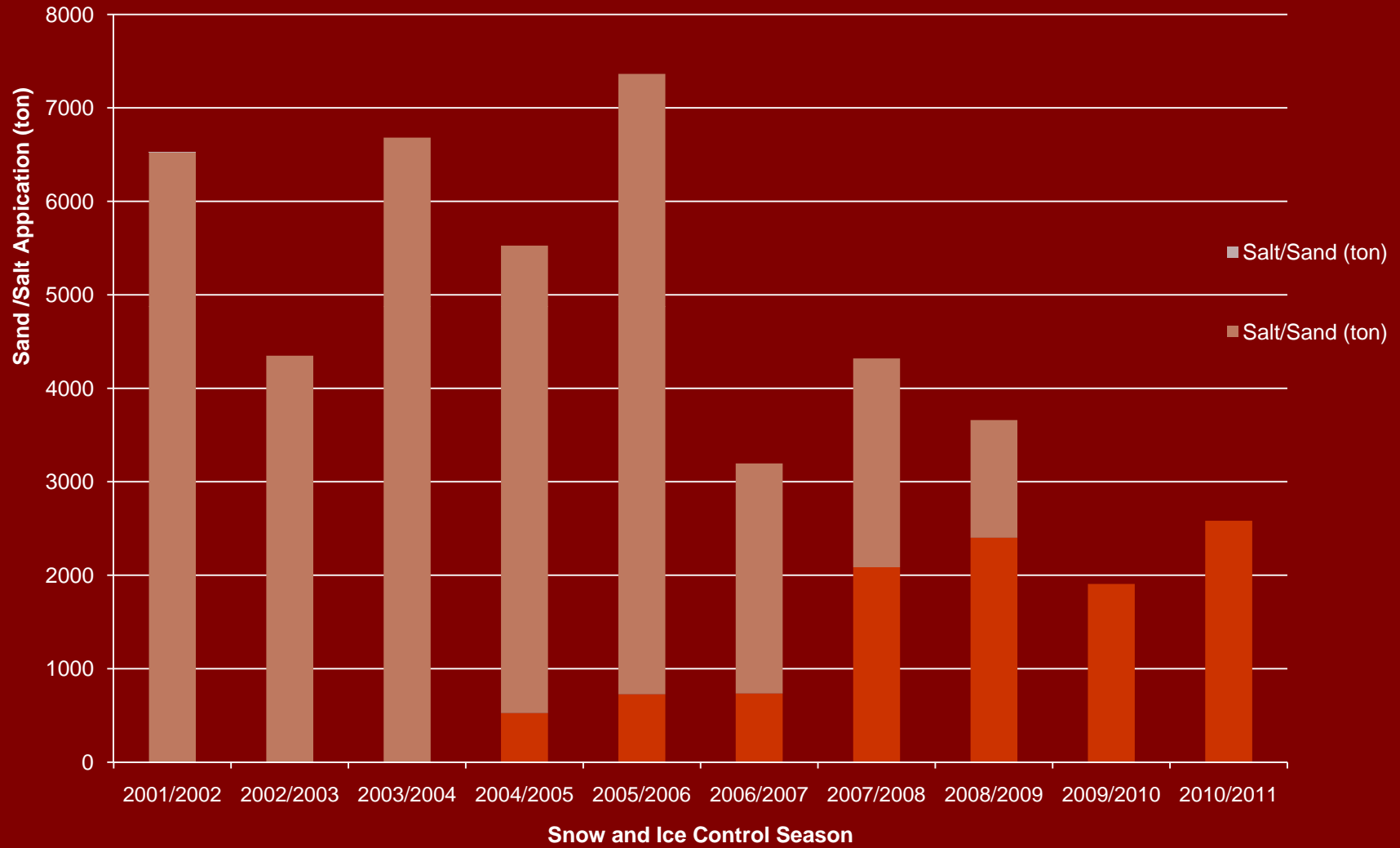
Material Name	Miles	Time	Gallons	Gallons/Ton
BRINE	298.9	26:15:57	794	9.0



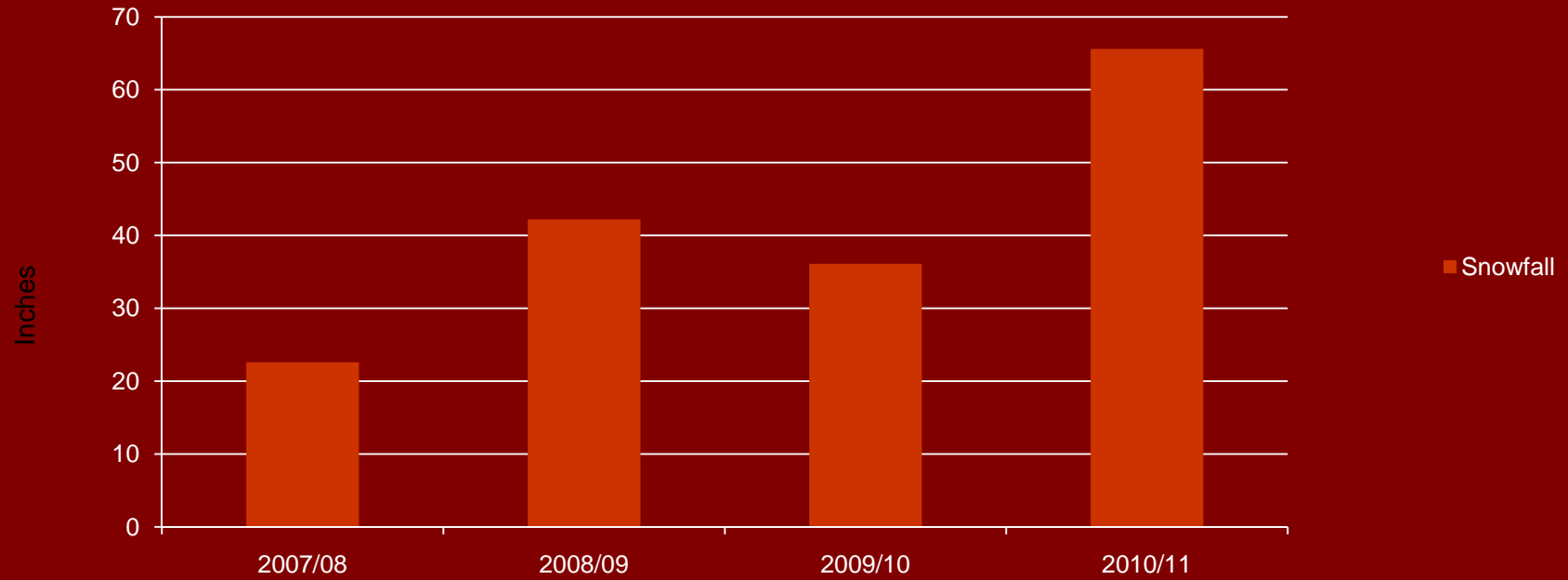
# Project Implementation Cost

- Total Project Cost = \$74,135
- Requested Cost Participation
  - \$22,681.95 City
  - \$51,451.71 SWWD

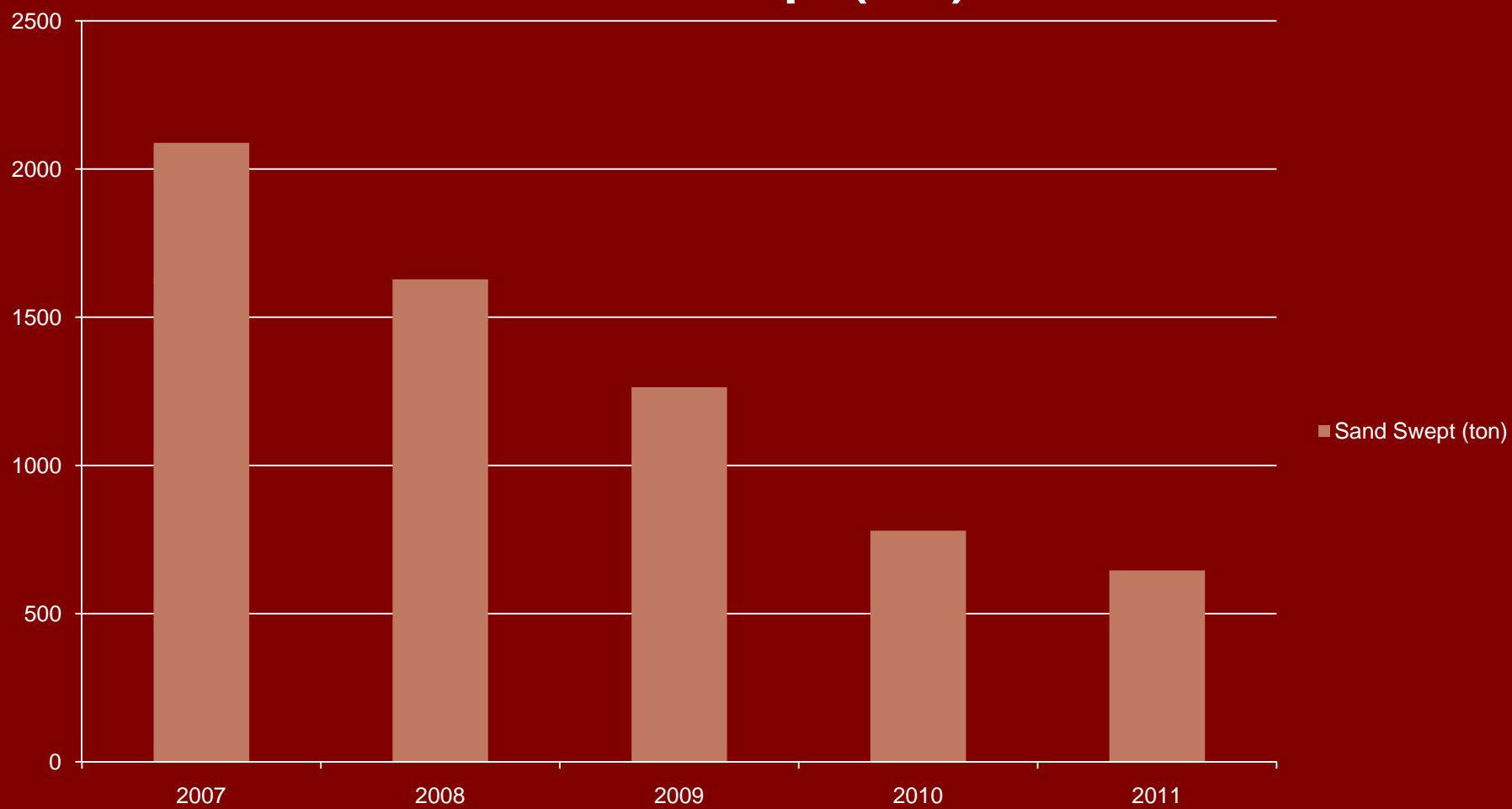
# Cottage Grove Historical Salt/Sand Use



## Snowfall at National Weather Service Station 213567 (Hastings Lock #2)



# Sand Swept (ton)



# Keys to Success

- Driver Education
- Calibration Each Season
- Storm Event Review
- Debrief with Drivers
- Establish Goals
- Adjust Prescription Settings

# Chloride Sampling

Jan 1 to Apr 30 Loading

Site	Year	Salt Usage (lbs)	Q (ac-ft)	Chloride Load (lbs)
Ridgewood				
	2010		48	2465942
	2011		15	586770
Thompsons Grove				
	2010		18	629557
	2011		15	17603

Questions?