Council Meeting Date: January 26th , 2009 **Agenda Item: 8(a)**

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	2008 December Snow Storm Review
DEPARTMENT:	Public Works Department
PRESENTED BY:	Mark Relph – Public Works Director
	Jesus Sanchez, Operations Manager

ISSUE STATEMENT:

The following is a report reviewing the recent snow storm that occurred in late December 2008. The purpose of this report is to provide Council with a characterization of the recent storm and identify the challenges that were faced by city staff in addressing the storm; identify equipment and operational opportunities for the department to address future storms of this magnitude; and to provide detail of the total costs incurred by the City due to the storm.

Snow Storm Charactization:

During the week of December 14th, we received approximately 2-3 inches of snow cover. The primary and secondary routes were plowed then a cold chill as low as 10° F hit the area, freezing the moisture on the roadway and causing a black sheet of ice to form.

The temperatures continued to stay below freezing for more than fourteen consecutive days, while snow fell again (Attachment A - Accu Weather report). This condition created insulation for the ice, thus keeping it from melting resulting in a thicker ice sheet being formed below the snow pack.

These icy conditions made it difficult for the Roads Crew driving the snow plows and sanders, to remove the top layer of snow, while the tires were spinning on the ice sheet below the snow. Additionally, it took much more time and energy to perform this task which made it a very slow process.

Snow plows generally do not perform well in icy conditions. Since the tips of the plows are rubber, the plow will only bounce on the ice rather than remove it. Shortly after the freezing, more snow fell and formed an additional layer over the ice, which made it even more difficult to remove the snow, because the plows were slipping on the ice as well.

The snow storm did drop more than 13 inches of snow on the ground, over that a 14 day period. This kept the crews with four plows working around the clock, 24 hours a day, for the better part of one and a half weeks.

Generally, the snow falls we have experienced in the past were followed by a warming trend of either rain or just warm air. When this happens, the roads that have been plowed usually will start to clear and dry out. This is more like our most recent snow fall of January 5th, 2009, which delivered about 3-4 inches. In this case, within a 12 hour interval, all primary and secondary roads were plowed and residential roads had slush conditions, which were also plowed with less effort.

Over 22,000 homes were affected by the December storm. According to information provided by the Customer Response Team (CRT), approximately 117 calls were received for street plowing and sanding services. Additionally, we received two to three calls from the Fire and Police Departments requesting clearing of their parking lot stations and two emergency calls. The Operations Division also received five complaints about snow plows going too fast, not getting to a residential street soon enough or the drivers seemingly not using the plows.

Finally, the Operations Division, due in large part to the working crews, received several accolades from residents either through emails or calls, complimenting them for their fine work.

Equipment and Supplies:
The City of Shoreline has two 5-yard-10 speed manual transmissions capacity trucks. Each truck is equipped with a sander, which holds 4 yards of sand, and includes plow attachments. In addition the city owns a one-ton truck with a small sander which holds 2 yards of sand with plow attachment; a three-quarter ton pick-up with a plow attachment and a mini- spot sander which holds ½ yard of sand; and a three-quarter ton pick-up with a plow and no sanding capacity. The larger 5-yard trucks generally run about an hour on average depositing sand before they need to re-load their v-boxes. The smaller trucks require more frequent re-loading.

During the snow all available units were put on the road to provide as much plowing and sanding as possible throughout the City operating 24 hours a day. During this time, there were numerous equipment failures from transmission repairs and sander motor failure, to windshield wiper motors going out. All equipment repairs needed to be performed by trained service repair personnel who, in some instances, were not available, as the shops were closed during the event. Because of this, staff took it upon themselves to perform the repair work if it was minor or if the repair could be performed on site without the need to take the truck into the shop.

The availability of sand and salt was somewhat problematic. Suppliers had a hard time delivering ample supplies because of the snow storm impact. Although we tapped available material suppliers locally, most of the materials had to be trucked in from Oregon. Storage of materials is also limited at the current facility, thus limiting our abilities to store large quantities.

Staffing Levels:
The Roads Crew was placed on a 12 hour on/off shift from the initial snow storm starting on December 14th through nearly the end of the year. At all times, the department was able to have a full crew available to operate all equipment when the equipment was operable.

For the most part, the crew was able to address the primary, secondary and residential streets several times. During this time, the crew performed admirably and with extreme caution. There were no vehicle accidents or personal injuries due in large part to the proper handling of all vehicles and equipment. Many citizens were quite pleased with the level of support, and sent many emails, cards, and or letters of thanks and support for the work the crew performed.

Communications:
Overall, communications worked quite well. Initially, Police had a few problems contacting the Roads Crew, but this was taken care of shortly after the first day. All emergency service providers (Fire and Police) were asked to call one main number instead a particular person or driver. All calls were channeled to the emergency line 206-801-2700.

Communications with the Emergency Coordinator and City Manager were clear and well coordinated. Storm management reports (Attachment B – Sample of Storm Management Report) were prepared in advance of incoming new snow alerting the CMO's office to all precautions and steps the Operations Public Works crew and other agencies were taking in preparation for the event. The Communications Manager posted the latest information on the City's portal and City's Website for anyone wanting the latest report on the conditions of the City during the snow storm.

Lessons Learned and Opportunities:
This storm was not typical of those we experience in the Northwest. This type of storm does not happen often, but when it does, it takes everyone by surprise, even the most experienced. The following recommendations are not necessarily tied to the December's storm however; having the proper equipment, efficient use of staffing levels, and having sufficient resources and supplies are the best approaches to addressing our normal annual snow falls. Below are items that have been noted as improvements and or enhancements to improve our service levels during these events:

1. **Updating our snow and ice plan on the City's Website.** Our current website explains the procedures that are followed relating to the plowing and sanding of priority routes, secondary routes and residential routes during a snow storm event. However, more information on how ice impacts our City streets can be helpful for citizens calling in to understand the magnitude of the challenges faced.

2. **Having the Proper Equipment for the Right Job.** Evaluating our equipment needs and prioritizing our equipment replacement to begin an equipment

upgrade program will be developed during the annual budget process. As with any project, having the right tools generally results in a better outcome. During the City's initial incorporation, trucks and related equipment were purchased to perform maintenance operations in-house that King County once provided. The current rolling stock and related equipment are becoming outdated, in need of repair and or replacement. The current financial status of the City's Vehicle Repair and Replacement program precludes the entire replacement of the Public Work's trucks. Replacing Public Work's current fleet of trucks on a graduated level through the annual budget review process is therefore recommended.

3. **Add an emergency call number to the City's Website contact form.** We had several emails to the city via our City Website; however emails were not directed to the Operations Roads Crews until after the fact. Improve our website contact section to include emails of emergent concern to the proper department.

4. **Utilizing Parks Staff and Resources.**
There are qualified staff personnel in the Parks Department with Commercial Drivers License (CDL) to operate our larger vehicles. They have offered to assist during storm operations; however their trucks would need to be retro-fitted with plowing and sanding attachments. In addition, it is recommended that perhaps they may be able to assist in clearing all city-owned parking lots thus saving valuable time for the Operations Roads Crew to stay on the main road systems.

5. **Evaluate a limited de-icing pre-treatment program which includes equipment and appropriate approved de-icing chemicals targeting arterials and established Metro Bus routes.** De-icing is an art relative to timing of pre-treating a road surface just before a serious freeze. De-icing after ice has formed has limited beneficial impact. However, in an instance such as this recent December storm, de-icing would have assisted greatly if applied at the right time. This program does require proper storage of chemicals and storage capacity. At this time, current storage facilities are inadequate. We would evaluate the options for a limited use of de-icing equipment.

6. **Establish emergency procedures for private contract plowing.**
Establishing an emergency private contracting service for plowing has its benefits and downsides. Customer Service is equally as important as the types of services we provide. Quality control may be an issue in this case as well as liabilities. I am sure some cities do contract with service providers, so reviewing their boiler plate contracts may be useful for Shoreline. Support from King County was limited, and generally will remain so as all available resources were used to address county roads.

FINANCIAL IMPACT: $100,680.39

• Overtime	$19,459.00
• Equipment repairs	$ 6,277.39
• Materials and supplies	$74,944.00
•	
	Total $100,680.39

Overtime

The overtime represents hours from December 14th through December 27th. There may be additional overtime during the following pay period of December 28th through January 5th, but this amount will be relatively minor compared to that experienced between December 14th and December 28th. The amount of overtime used for this event basically used the entire 2009 amount budgeted for the Street crews. (The overtime experienced during the storm was charged to 2009 as the paychecks were issued on January 2, 2009.) In 2008 overtime for the Street crews totaled less than $10,000, half of what was experienced during this snow event. Staff will monitor future operations in 2009, but it is likely that additional overtime budget will need to be appropriated in 2009, especially if there are additional weather events.

Equipment and Materials

Staff is finalizing 2008 expenditures for equipment and materials. At this time, staff anticipates that the amount expended during the snow event will not exceed the 2008 budget.

Special Note: During this storm, we utilized 200 yards of sand and salt mix over a two week period compared to a total of 160 yards during the entire winter season.

RECOMMENDATION:

No action is required. This report provides Council with a characterization of the recent storm and identifies the challenges that were faced by city staff in addressing the storm; identifies equipment needs of the department to address future storms of this magnitude; and provides details of the total costs incurred by the City due to the storm.

Approved By:_____City Manager ____ City Attorney ___

ATTACHMENTS:

Attachment A – Accu Weather Report
Attachment B - Sample – Storm Management Report

Attachment A

Seattle, WA Past Month's Weather

Thursday, January 08, 2009

Metric | English

Past Month Details

Actual Conditions for December 2008
(Reports from SEA)

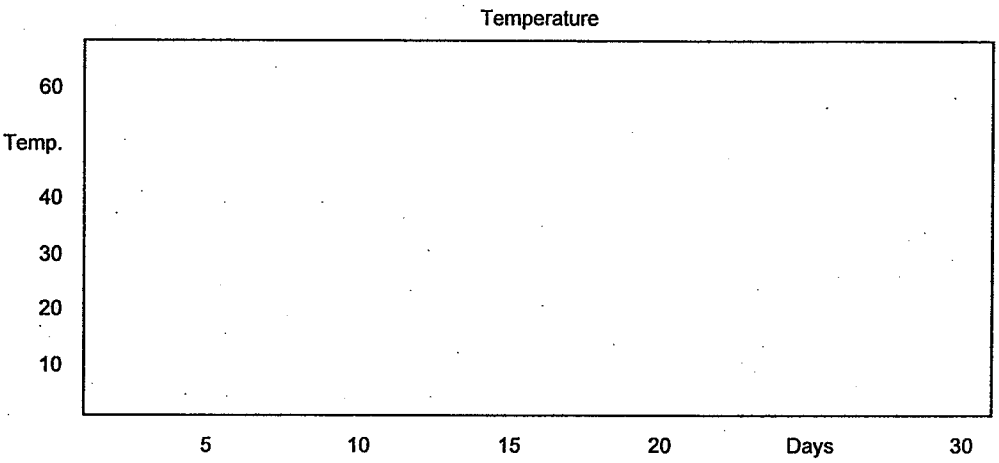
Select a new month

Date	Actuals (° F)			Normals (° F)				Records (° F)		Precip Amounts			Degree Days	
	High	Low	Avg	High	Low	Avg	Dpt	High/Year	Low/Year	Precip	Snow	Ground	Heating	Cooling
1	55	50	52	47	37	42	10	57 / 1958	20 / 1985	0.16	-	-	13	0
2	51	43	47	47	37	42	5	57 / 1958	25 / 1985	0.03	-	-	18	0
3	49	42	46	47	37	42	4	60 / 1965	27 / 1994	0	-	-	19	0
4	49	37	43	47	37	42	1	60 / 1945	21 / 1994	0	-	-	22	0
5	48	34	41	46	37	42	-1	55 / 1989*	21 / 1994	0	-	-	24	0
6	50	38	44	46	37	42	2	57 / 1965	19 / 1956	0	-	-	21	0
7	49	43	46	46	37	41	5	55 / 1976	18 / 1972	0.09	-	-	19	0
8	45	39	42	46	36	41	1	59 / 1957	13 / 1972	0	-	-	23	0
9	46	42	44	46	36	41	3	58 / 1993	21 / 1972	0.06	-	-	21	0
10	48	44	46	46	36	41	5	64 / 1993	21 / 1972	0.05	-	-	19	0
11	45	38	42	46	36	41	1	56 / 1959	23 / 1961	0	-	-	23	0
12	45	34	40	46	36	41	-1	60 / 1995*	22 / 1972	0.73	-	-	25	0
13	40	32	36	45	36	41	-5	59 / 1952	19 / 1972	0.34	-	-	29	0
14	33	22	28	45	36	41	-13	59 / 2002	18 / 1945	0.06	0.7	-	37	0
15	30	19	24	45	36	41	-17	63 / 1980	19 / 2008	0	-	1	41	0
16	31	20	26	45	36	41	-15	57 / 1974	10 / 1964	0	-	1	39	0
17	36	29	32	45	36	40	-8	57 / 1994	11 / 1964	0.05	-	1	33	0
18	35	25	30	45	36	40	-10	54 / 2004	18 / 1964	0.18	2.7	3	35	0
19	27	20	24	45	36	40	-16	56 / 1994*	17 / 1949	0	-	-	41	0
20	26	14	20	45	36	40	-20	57 / 1973	14 / 2008	0.16	3	3	45	0
21	31	24	28	45	36	40	-12	56 / 2005	12 / 1990	0.27	3	3	37	0
22	34	27	30	45	35	40	-10	57 / 2005	14 / 1990*	0.02	0.2	6	35	0
23	35	29	32	45	35	40	-8	58 / 1950	9 / 1983	0	-	4	33	0
24	38	30	34	45	35	40	-6	62 / 2005	16 / 1948	0.44	2.6	5	31	0
25	36	33	34	45	35	40	-6	60 / 1980	24 / 1995	0.2	0.4	3	31	0
26	38	32	35	45	35	40	-5	62 / 1980	22 / 1948	0.15	0.1	3	30	0
27	44	37	40	45	35	40	0	58 / 1994	20 / 1968	0.29	-	1	25	0
28	44	38	41	45	35	40	1	56 / 1980	12 / 1990	0.35	-	-	24	0
29	42	36	39	45	35	40	-1	54 / 1976	8 / 1968	0.26	-	-	26	0
30	43	34	38	45	35	40	-2	56 / 1958	6 / 1968	0.12	-	-	27	0
31	44	37	40	45	35	40	0	56 / 1996*	13 / 1978	0.09	-	-	25	0

Legend

Avg:	Average (The formula is High Temperature + Low Temperature / 2)
Dpt:	Departure (from Normal, the formula is Actual Average - Normal Average)
Ground:	Snow amount on the ground
TR:	trace amount of precipitation; less than 1/100th of an inch of liquid, less than 1/10th of an inch of snow
M:	Missing information not supplied by the National Weather Service
*	When an asterisk appears next to a year, it indicates a record tie so the last year is shown

Monthly Graph for December 2008



Legend:
- Record High Temperature (Usually the top line)
- Actual High Temperature
- Actual Low Temperature
- Record Low Temperature (Usually the bottom line)
- Normal High Temperature
- Normal Low Temperature

Monthly Totals for December 2008

High Temperature	
Actual	55°F (on Dec. 1)
Record	64°F (on Dec. 10 - 1993)

Low Temperature	
Actual	14°F (on Dec. 20)
Record	6°F (on Dec. 30 - 1968)

Normal Averages	
High	46°F
Low	36°F
Departure	-4°F

Degree Days	
Cooling	0
Heating	871

Attachment B

Weather Snow Event Update:

Wednesday Afternoon December 17, 2008 (4::30 pm- 7:30pm)

Shoreline received about 1.5" inches of snow. The snow continued to fall until 7:30 pm without stopping. Brian dispatched all the operators to their primary routes first. The plow operators continued on their primary routes until the snow had stopped. Crews stayed on their primary routes plowing the slush off the roads before the temperatures had a chance to drop, turning the roads to icy conditions.

First Shift Crew:
Brian Breeden
Paul Kinney
Bob McAndrews
Scott Sallee

- Received No calls from CRT, Police or Fire
- The hill (3rd Ave NW & 205th St.) remains closed at this time.

Thursday Morning December 18th, (Midnight to Noon shift)

Second Shift came in at midnight to continue sanding and plowing through this morning. The temperatures are expected to drop down to the upper 20s which may cause freezing and icy conditions by morning. Snow could continue to fall in morning between 6:00 am and 8:00 am.

Second Shift Crew:
David LaBelle
Steve Smith
Marc Stankey
John Read

Public Works Storm Preparations remain the same until further notice.

REST OF TONIGHT Snow concerns remain north of the area.

By 06/0700 Thu morning, light to moderate snow could be falling over the northern end of the city then spread southward through the rest of the morning. The heaviest precip will be E of Lk Washington but cannot rule out 1-2" in Seattle through the morning hours Thu followed by cloudy to mostly cloudy skies and errant flurries through the afternoon and evening hours. Temperatures will be falling off quickly in the evening as well with ice concerns developing on any wet surfaces soon after dark. Flurries come to an end by Fri morning and skies slowly clear during the day. Highs well below freezing both Fri and Sat with overnight temps nearing 20 degrees once again.