



REVIEW OF SNOW OPERATIONS

This report is a summary and review of the Town of Hempstead practices and procedures as regards snow operations and, more specifically, the activities undertaken prior to, during and after the snow storm of January 4, 2018.

*Town of
Hempstead*

*Office of the
Supervisor*

February 20, 2018

Laura A. Gillen
Supervisor



TOWN OF HEMPSTEAD
ONE WASHINGTON STREET, HEMPSTEAD, NY 11550-4923
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February 20, 2018

Dear Town Residents,

The Town of Hempstead is the largest township in the United States, encompassing over 142 square miles, with a population of approximately 770,000 people and 1,200 miles of local roads to regularly maintain and plow during snow events.

The January 4th, 2018 blizzard that hit our Town brought sustained wind gusts of 25-30 mph and the accumulation of snow which exceeded a foot in many communities. The Town employees involved in snow operations worked tirelessly on our residents' behalf and I am greatly appreciative of their efforts.

While nobody can deny the severity of the storm that we experienced, Town Hall nonetheless received significant feedback from residents regarding our various Department's efforts to effectively clear our roadways of snow.

Being in office for only three days when the storm occurred, I directed my staff to commence a fact-finding and operational audit to assess the policies, procedures and protocols used by the Town's Departments charged with snow removal.

Included in this report is a detailed summary of the Town's actions taken before, during and after the event, along with issues that have been identified as key factors in the Town's present and future abilities to clear roadways during major snow events, such as the one experienced on January 4th.

I believe that the recommendations contained within this report will significantly improve the speed and effectiveness of the Town's response during future events and will do so without raising costs or overburdening taxpayers financially.

Sincerely,

Laura A. Gillen

Laura A. Gillen
Supervisor

TOWN OF HEMPSTEAD
OFFICE OF THE SUPERVISOR
REPORT OF SNOW REPOSE
STORM EVENT OF JANUARY 4, 2018

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I. Introduction

Winter storms can be trying for everyone; motorists, residents and snowplow operators alike. The goal of the various Town Departments involved in snow operations is to remove snow and ice from our roadways as rapidly and efficiently as possible to keep roads open and essential traffic moving.

The Departments attempt to return road surfaces to safe winter driving conditions as soon as feasible in consideration of the weather conditions. With proper use of storm forecasts, personnel, equipment, and deicing materials, the desired result can usually be attained.

The snow storm of January 4, 2018 brought blizzard like conditions to the Town of Hempstead, severely testing the abilities and stamina of the employees responsible for salting and plowing Town of Hempstead roadways. As much as the employees put forth a genuine effort, there were significant issues experienced by Town residents attempting to traverse Town roadways, not just immediately after the snow ceased but also days later.

This report is intended to provide a summary of the past practices of the Town Departments involved in snow operations, highlight issues experienced by Town residents during and after the snow storm of January 4th, and provide recommended activities to improve snow operations for future storms.

II. Weather Event Summary

a. Predicted Snow Storm

The storm prediction early in the week of January 1st, 2018 from the National Weather Service was, "...a storm warning is in effect in the city and Nassau County from 1 a.m. Thursday to 1 a.m. Friday. Five to 8 inches of snow is expected to fall with sustained winds of 20 to 30 miles mph, and gusts up to 50 mph. For Suffolk County, a blizzard warning has been issued. Snowfall of 8 inches to a foot is predicted." Snow fall amounts predicted highest for eastern Suffolk County, with a lesser amount anticipated for Nassau County.



(Graphic CBS 2 New York)

b. Actual Snow Storm

On the morning of January 4th, residents of the tri-state area awoke to what was being termed a "bomb cyclone," a powerful winter storm that acts like a snowy hurricane. Pictures of this explosive weather event from space show just how hurricane-like it is.



(Graphic National Oceanic and Atmospheric Administration)

The intense storm produced what are known as gravity waves, similar to ocean waves but in the atmosphere. Such waves are known to form in rapidly deepening low-pressure systems. In fact, this storm's pressure descended more rapidly than most storms. Within a 24-hour period, the storm's pressure went down by 54 millibars (to be considered a bomb cyclone, a storm must drop in pressure by 24 millibars in 24 hours). The storm of January 4th's pressure decreased by more than twice the standard criteria; the lower the pressure, the stronger the storm. "This storm has one of the greatest rapidly deepening rates we've ever seen" (Bob Oravec, lead forecaster with the National Weather Service).

By mid-morning on January 4th, with blizzard conditions and freezing temperatures, NYS Governor Andrew Cuomo declared a state of emergency across NYC, Long Island and Westchester County, and a statewide travel advisory from 9 AM - 4 PM.

Throughout the morning and early afternoon, weather predictions continued to worsen for Nassau County. Forecasts increased to 12+ inches of snow for most of Long Island (all of Suffolk and Nassau County), with wind gusts up to 55 mph making for whiteout conditions on Long Island.



(Graphic ABC 7 NY)

Even as the last flakes fell on Thursday evening, and the snow moved out, strong wind gusts of 40 mph or more continued throughout the night, leading to areas of blowing and drifting snow.

Representative actual snow fall amounts for Nassau County:

- Wantagh - 14.2"
- Rockville Centre – 14.0"
- West Hempstead - 12.5"
- Merrick - 11.0"

III. Town Response to Weather Event

a. Summary of Standard Snow Operations

The Town of Hempstead Highway Department, with primary assistance from the Sanitation and Parks Departments, is responsible for the salting and removal of snow from the 1,200 miles of town roadways and municipal parking fields in unincorporated areas of the Town. The responsibility for implementing snow response operations lies with the Commissioner of Highways. Additional snow response support may be provided on an as needed basis by the Water Department and the Department of Conservation and Waterways.

The objective of the Highway Department is to remove snow and ice from the roadways as safely, quickly, efficiently, and cost-effectively as possible to restore normal traffic conditions and services to the residents. The goal being to provide safe and drivable road conditions during and at the earliest practical time following the conclusion of a winter storm.

Each and every storm is different. The Commissioner of Highways is charged with the management of snow operations; utilizing judgement in making well-informed decisions in a consistent manner for each snow event.

Snow operations are conducted primarily from eight (8) Town facility locations:

- Roosevelt, Franklin Square and Inwood Highway Facilities
- Merrick and Oceanside Sanitation Facilities
- Levittown, Baldwin and Point Lookout Park Facilities

Of these facilities, only the Roosevelt facility has full back-up electrical generation capacity. All other facilities have limited back-up electrical generation capacity through the use of mobile/portable generators. The back-up electrical

power generation is important to ensure that, at a minimum, vehicle fuel pumps are operational in the event that the utility electrical service is lost.

While not a base for snow operations, the Department of Water facility in East Meadow is utilized for the repair of snow equipment during snow events, along with the Sanitation facility in Merrick.

The Commissioner of Highway, with support of associated senior supervisors, is responsible for weather monitoring through various websites (ie. National Oceanic and Atmospheric Administration, "NOAA"), the use of National Weather Service daily forecasts, and input from the Department of Public Safety. The Commissioner of Highways is responsible for initiating snow operations, contacting the Commissioners of the other involved Departments, and placing salting and/or snowplow crews on "On-call Status."

When snow or ice is predicted or begins accumulating on Town roadways, the Commissioner of Highways will authorize commencement of salting and/or plowing operations. Immediately prior to or during the early stages of a snow event, salt is applied to all Town roadways. Upon the accumulation of approx. 2" of snow, plowing operations may be commenced.

The Highway Department has previously established the following priority order for Town roadways and salting/plowing operations:

- Priority One - Major collector and through Streets ("Priority Roads"); priority is given to streets which carry the largest traffic volume. Priority roadways are identified within each map area (described later in this section) and are the first to be salted and/or plowed. Also, roads with hills where traction problems often cause hazardous driving conditions are considered a priority.

- Priority Two - Residential streets. Residential/secondary roadways are salted and/or plowed as a matter of course as the vehicle operator works through the assigned map area.
- Priority Three – Dead-end streets/cul-de-sacs. More time is necessary to clear snow from cul-de-sacs than on typical “uninterrupted” stretches of roadway. Due to this, cul-de-sacs and dead-end streets have a lower priority.
- Priority Four – Commuter and commercial parking fields.

As stated, priority is to clear the main roads (priority roadways) to provide safe access for emergency vehicles and to maintain traffic flow. A listing of priority Town roadways is provided in Appendix A.

Although no snow event is exactly the same, as a rule of thumb, the Highway Commissioner has estimated that it usually takes the Highway Department, and supporting Departments, approximately five (5) to six (6) hours to completely salt or plow the full inventory of Town roadways and parking fields.

The Highway Department allocates snow operations resources by “map area.” The Town is divided into 189 “map areas” that encompass all areas for which the Highway Department, and supporting Departments, are responsible to provide salting and snow plowing. These maps were originally developed approximately 50 years ago by a consulting engineering firm retained by, what was then, the Town of Hempstead Department of Public Works. With the exception of minor modifications and limited map area boundary changes, the maps are mostly unchanged from their original development. Neither the specific roadway miles nor square miles that make up each map area is known. Below is a sample of a map area (outlined in red); the priority roadway(s) are highlighted in yellow.



The Town Departments primarily involved in snow response operations are each assigned the following number of map areas:

TABLE 1 – NUMBER OF MAP AREAS BY DEPARTMENT

Department	Number of Map Areas
Highway	119
Sanitation	35
Parks	35
Total	189

[Note: for the assignment of map areas, there are four (4) small map areas that are always assigned in conjunction with an adjacent map area and are considered a single map area; the small map areas (and adjacent assigned map area are U-1 (assigned with U-2), EMN-24 (assigned with EMN-4), BRT-1 (assigned with E-1) and LK-6 (assigned with LK-4).]

For reference, a complete set of all the individual 189 map areas are included within Appendix B.

For the purposes of assigning supervisory personnel, map areas are grouped by regional maintenance areas. The maintenance areas, map areas and the Department responsible for salting and snow plowing are as follows:

TABLE 2 – MAINTENANCE AND MAP AREAS

Maintenance Area Designation	Map Areas Encompassed	Dept Responsible for Snow Plowing
Baldwin	BA-1 thru BA-9	Highway (BA-1 – BA-6) Parks (BA-7 – BA-9)
Bellmore	B-1 thru B-11	Sanitation (all)
East Meadow North	EM-1 thru EM-7 and EM-24	Highway (all)
East Meadow South	EM-8 thru EM-23	Highway (all)
Elmont	E-1 thru E-9 and BRT-1	Parks (E-1 – E-5 & BRT-1) Highway (E-6 – E-9)
Five Towns North	H-1 thru H-6	Highway (all)
Five Towns South	I-1 thru I-3 and WM-1 thru WM-5	Highway (all)
Franklin Square	FS-1 thru FS-9	Highway (all)
Lakeview	LK-1 thru LK-6	Highway (all)
Levittown North	L-1 thru L-11	Parks (all)
Levittown South	L-12 thru L-24	Highway (all)
Merrick	M-1 thru M-12	Sanitation (all)
North Valley Stream	NVS-1 thru NVS-10	Highway (all)
Oceanside	O-1 thru O-14	Highway (O-1 – O-3) Parks (O-4 – O-14)
Point Lookout	PL-1 thru PL-3	Parks (all)
Roosevelt	R-1 thru R-6	Highway (all)
Seaford	S-1 thru S-8	Sanitation (all)
South Hempstead	SH-1 thru SH-6	Highway (all)
Uniondale	U-1 thru U-7	Highway (all)
Wantagh	W-1 thru W-11	Highway (W-1–W-6; W-8) Sanitation (W-7, 9 - 11)
West Hempstead	WH-1 thru WH-7	Highway (all)

Each of the primary involved Town Departments has a varying methodology for the assignment of snow-fighting equipment within each map area. The Highway

Department attempts to assign snow-fighting equipment to map areas on a 1 to 1 ratio (1 snow plow vehicle assigned to each map area). The Commissioner of Highways has indicated that due to a shortage of snow-fighting equipment, they must double-up some map areas, meaning that a single snow plow vehicle must cover two (2) map areas. The Sanitation Department, using large garbage trucks outfitted with plows, assigns two (2) map areas to each plow vehicle for small to moderate snow events; but will assign plow vehicles on a 1 to 1 ratio (1 vehicle per map area) for more significant snow events. For the January 4th snow storm, the Sanitation Department assigned snow plows on a 1 to 1 ratio. The Parks Department attempts to assign two (2) vehicles (two [2] plow vehicles or a plow vehicle and payload) to each map area.

The assignment of snow equipment is being done at the discretion of each Commissioner, not as a single cohesive whole. This likely results in differing and/or unequal coverage of map areas.

A summary of the primarily involved Department’s snow operations equipment is presented below. A complete list of snow operations equipment, as provided by the Departments, is included in Appendix C. It should be noted that specialized equipment (payloaders and brine applicators) have limitations in their use for snow operations. Brine applicators are used pre-storm to limit snow accumulation and ice build-up; and, payloaders may be used to clean-up intersections and remove snow piled at the end of a cul-de-sac/dead-end. Neither is suitable for assignment to a map area for plowing responsibility.

TABLE 3 – SNOW OPERATIONS EQUIPMENT SUMMARY

Vehicle/Equip Type	Highway	Sanitation	Parks	Total
Dump Truck w/ Plow	126	0	38	164

Garbage Truck w/ Plow	0	53	0	53
Pick-Up Truck w/ Plow	41	25	20	86
Payloader (Heavy Equip)	35	2	9	46
Payloader (Tractor Type)	0	0	1	1
Brine Application	0	6	0	6
Sander	6	2	0	8
Total (All Equipment)	208	88	76	364
Total (Plow Equipment)	173	80	66	319

Note that the Department of Conservation and Waterways has five (5) pick-up trucks that can be mounted with plows, one (1) dump truck that can be mounted with a plow and two (2) tractor-trailers that can be used to transport salt between storage locations, if needed.

The primary involved Town Departments have varying methodologies for the assignment of field supervision for snow operations. The Highway and Parks Departments assign a foreman to each “maintenance area” and assigns a Supervisor to oversee a group of four (4) foremen. The maintenance areas and associated map areas were previously listed above within Table 2.

The Sanitation Department has a more loosely-defined supervision plan, where two (2) Supervisors are assigned, one to be responsible for “northern” map areas and the other responsible for “southern” map areas. Northern map areas for the Sanitation Department are those north of Sunrise Highway; and, southern map areas are those south of Sunrise Highway.

The foreman assigned to the maintenance areas, as well as next level Supervisors, travel the Town roadways visually inspecting the work of the plow operators. The vehicles used by the foreman and Supervisors are equipped with plows and both foreman and Supervisors will plow roadway segments that have significant snow accumulation and/or respond to complaint locations.

As mentioned previously, in addition to roadways, the Highway Department, along with the Sanitation and Parks Departments, are responsible for snow plowing of LIRR commuter parking lots and Town-owned municipal parking fields in unincorporated areas.

Included as Appendix D is a detailed listing of all commuter and commercial parking fields for which the Town provides salting and snow plowing.

Steep roadways are noted specifically within each map area and receive priority salting and/or sanding.

Critical facilities and locations (Medical, Fire Departments, Dialysis, etc.) are noted within each map area such that if a particular need arises, the vehicle operator can quickly identify and respond to the location.

b. Pre-Storm Activities

During the day of January 3, 2018, the new Town Supervisor convened a meeting of the Commissioners of the various Departments that play a role in the Town response to a snow storm. This included Highways, Sanitation, Parks, General Services, and Public Safety, among others. Each provided summaries of their planned activities regarding the impending snow storm. All indicated their readiness and preparedness for the snow storm.

As a proactive measure in advance of the predicted snow event, during the day on January 3rd, Highway Department crews were dispatched to apply salt on all dead-end streets (anti-icing measure). The lower volume of traffic on dead end streets allows for the salt to remain on the roadway surface for a longer period of time. Early salting of main roadways is not effective as the salt will be dislodged from the road surface and cast to the side by the constant higher traffic volume.

In addition, during the day on January 3rd, two (2) available Town vehicles (Sanitation Department) equipped with brine application equipment were dispatched to apply brine solution to roadways with hills. The use of brine is known as a “pre-wetting” measure. The liquid brine solution will adhere to the roadway and not be dislodged by traffic. The Town’s brine mixing system has the ability to add beet juice to further increase the effectiveness of the solution at extremely low temperatures.

Anti-icing and pre-wetting measures are recommended pro-active approaches to winter driver safety by most transportation agencies. Application of salt and brine prior to snow accumulation helps to prevent the bonding of the snow (or ice) directly to the roadway surface.

c. During Storm Activities

Town staff involved in snow operations were requested to report to their associated work locations at 12:00 am on Thursday January 4th. At that time, roadway salting operations began for all Town roadways. Salt is stockpiled in nine (9) locations for refilling vehicles:

- Roosevelt Highway Yard (30,000 tons salt stored)
- Inwood Highway Yard (2,800 tons)
- Franklin Square Highway Yard (3,200 tons)

- Seamans Neck Park (400 tons)
- Baldwin Park (400 tons)
- Merrick Sanitation Facility (800 tons)
- Oceanside Sanitation Facility (1,200 tons)
- Town Parking Field L-02 (4,000 tons)
- Lido Beach/Point Lookout (800 tons)

Orders for salt delivery are regularly made to keep the storage at maximum capacity.

Salt application to all Town roadways was completed by approximately 5 am on the morning of January 4th. The Commissioner of Highways has estimated that one complete application of salt to all Town roadways can range from a low quantity of 4,000 - 5,000 tons to a high quantity of 8,000 – 9,000 tons, depending upon the application rate setting of the equipment. A range is given, as the equipment adjustment is not exact and the application amount can vary somewhat (+/- 20%).

Shortly after completing salting operations and based upon the rapidly accumulating snow, at approximately 5:30 am, snow plowing operations were commenced. By approximately 6 am, Town snow plow vehicles were on roadways clearing snow. Snow plowing operations continued for approximately the next 21 hours. Encompassed within the 21 hours were staggered one (1) hour breaks provided to employees between 12 pm and 2 pm for lunch and a longer two (2) hour break at 4 pm.

The snow fall essentially subsided between 5 pm and 6 pm. Town staff continued to plow roadways into the early hours of January 5th. Beginning at approximately midnight January 4th (12 am January 5th) and continuing until approximately 4 am on January 5th, plow vehicles were dispatched to: commuter and commercial parking lots; roadway intersections with significant snow mounds; dead-end streets with

significant snow accumulation; and, to respond to specific complaint locations. The sustained winds and periodic gusts resulted in snow being blown back on roadways, especially those adjoining large open properties (ie. School yards, athletic/playing fields, etc.).

d. Post-Storm Activities

Beginning at approximately 7 am on January 5th, snow plowing operations were recommenced with the intent to re-plow and, where possible, widen all Town roadways. Plow vehicles were also dispatched to specific complaint locations. Post-storm activities as related to Town roadways and parking fields are almost entirely carried out by the Highway Department. The Sanitation Department must return to garbage, recycling and other regularly-scheduled collections responsibilities. As garbage collection was cancelled for January 5th (due to the need to continue snow operations into the early morning hours), the Sanitation Department was available to provide assistance to the Highway Department for post-storm snow clean-up operations. The Parks Department works post-storm to plow and clear snow from the various Parks facilities that have scheduled community activities/events.

Highway Department crews continued to clear snow from various Town roadways, intersections, and respond to complaint locations throughout the weekend of January 6th - 7th and into the following week.

IV. Cost of Snow Operations (January 4, 2018 Storm)

The personnel costs presented below for snow response efforts, as prepared by the involved Departments, encompass regular (straight-time) and overtime costs for Thursday January 4th and Friday January 5th; as well as any costs for the weekend of Saturday January 6th and Sunday January 7th. Beginning the following week of January 8th, snow operations were conducted as part of the normal workday.

a. Personnel

Department	Employees Involved in Jan 4 th Snow Resp	Regular Workday Salary Costs	Overtime Salary Costs	Total Salary Costs
Highway	179	\$88,202	\$141,613	\$229,815
Sanitation	111	\$32,079	\$89,020	121,099
Parks	68	\$21,428	\$67,623	\$89,051
Conserv & Waterways	23	\$7,203	\$12,386	\$19,589
Total	381	\$148,912	\$310,642	\$459,554

b. Materials (Salt)

It has been estimated by the Highway Department that 8,000 to 9,000 tons of salt was applied between the pre-storm activities of January 3rd and the early morning of January 4th. At the cost of \$73.95 per ton (price in Nov/Dec 2017), the salt applied for the January 4th snow storm has a value of \$591,600 to \$665,550.

Subsequent to the January 4th snow storm, the Highway Department has been receiving regular deliveries of salt to restock the various storage locations. To date, the Highway Department has received 6846 tons of salt at a cost of \$496,130.

c. Equipment (Vehicle Fuel)

Using the vehicle mileage data from the GPS program, the price that the Town was paying for diesel and regular unleaded gasoline (\$2.408/gal and \$1.8015/gal, respectively) at the time of the snow storm, and applying estimated motor vehicle fuel consumption and mileage data published by the U.S. Energy Information Administration for light-duty vehicles and heavy duty trucks, the cost of vehicle fuel for the January 4th snow storm was approximately \$12,000.

d. Vehicle and Property Damage Notice of Claims

As of February 9, 2018, the Town has received 20 Notices of Claim for vehicles and property damages alleged to have been caused by Town snow plows during snow removal operations. Departments involved are Highway, Parks & Recreation, and Sanitation. The total vehicle and property damages being claimed is approximately \$ 28,800. None of the Notices of Claims received to date involve a claim for personal injuries.

e. Snow Budget

Review of the adopted Town budget for 2018 and confirmed by the Office of the Town Comptroller, the snow budget for 2018 includes:

	<u>Budget Amount</u>
Snow Wages (ACCT 1030)	\$ 500,000.00
Snow Removal	<u>\$1,500,000.00</u>
Total	\$2,000,000.00

As advised by the Office of the Town Comptroller, Snow Wages is for part-time/temporary snow plow operators, Highway Department overtime and reimbursement to other Departments for their employee overtime only.

Highway Department personnel costs for snow operations conducted during the normal workday would be charged to Highway salaries and wages budget code(s).

V. Review/Observations of Town Response to Weather (Snow) Event

a. Staff/Employees

Each of the primary Departments involved in snow operations provided a list of employees who actively participated in snow response activities for the January 4th storm (as part of labor cost information). A summary of the snow response staffing information is presented below.

TABLE 4 – STAFFING LEVELS (FULL & PART-TIME EMPLOYEES) FOR PRIMARY SNOW OPERATIONS DEPARTMENTS

Employee Type	Highways	Sanitation	Parks	Total
Full-Time	146	97	64	307
Part-Time	13	14	4	31
Seasonal	3	0	0	3
Temporary	17	0	0	17
Total	179	111	68	358

The staff totals include both administrative personnel as well as field staff (supervisors, foremen, plow operators, etc.).

Snow operations field staff may be actively involved in snow plowing activities for extended periods of time. A drop-off in the quality of the work effort can be expected the longer the snow operations staff in continuously engaged in snow-fighting efforts.

The Departments involved in snow operations do appear to have significant part-time, seasonal and/or temporary staff that could be a resource during a long duration storm. Use of the additional staff could provide for longer breaks and/or working in shifts during the extended storm event.

Within the first hour of snow operations, as a standard procedure, maintenance area supervisors complete a “Daily Report” form which is intended to identify the vehicle (by I.D. number) and the operator/driver (by name) for each map area. The “Daily Report” forms for the January 4th storm includes information regarding the Highway vehicles and operators but does not include information regarding the Sanitation and Parks Department vehicles/operators.

For reference, a blank copy of the “Daily Report” form is included in Appendix E.

Another important factor impacting snow removal, beyond simply the number of staff available for snow plowing, is the distribution of equipment maintenance/repair staff (mechanics). With the consolidation of all equipment maintenance staff to two (2) locations under the prior Town Administration (the Water Department’s East Meadow Facility and the Sanitation Department’s Merrick Facility), the ability to repair and return snow-fighting equipment to active use during a snow storm would be hindered. For the January 4th snow storm, the new Town Administration made the decision to distribute mechanics, with tools, to additional locations beyond East Meadow and Merrick, including Market Lane, Lido/Point Lookout, Roosevelt, Franklin Square and Greenfield Cemetery. For future snow events, this will become a standard operating procedure: to call-in mechanics and have them report to the locations at or near snow operations centers.

b. Equipment

Over the course of the past several years, the Town’s vehicle fleet has been reduced through the “obsoleting” of vehicles. While older vehicles should be periodically removed from the fleet as part of a planned replacement program, the removal of vehicles without replacement is unwise.

As previously mentioned, each of the primary Departments involved in snow operations was requested to provide an inventory of vehicles/equipment designated for snow response (Table 3). The following table summarizes the actual number of vehicles/equipment utilized for the January 4th snow storm. This information comes from the GPS program and Department reporting.

TABLE 5- SNOW VEHICLES/EQUIPMENT UTILIZED (JANUARY 4TH STORM)

Vehicle/Equip Type	Highway	Sanitation	Parks	Total
Dump Truck w/ Plow	105	0	29	134
Garbage Truck w/ Plow	0	40	0	40
Pick-Up Truck w/ Plow	30	23	17	70
Payloader (Heavy Equip)	29	2	4	35
Payloader (Tractor Type)	0	0	0	0
Brine Application	0	2	0	2
Sander	6	2	0	8
Totals	170	69	50	289

Of the reported total inventory of vehicles/equipment available for snow operations (364), there were 289 utilized for the January 4th snow storm. Of likely more importance, of the total inventory of “plow” vehicles (319), there were 252 utilized for the January 4th snow storm.

Included as Appendix F is a summary of the review of snow equipment actively utilized for the January 4th snow storm as compared to reported Department inventory.

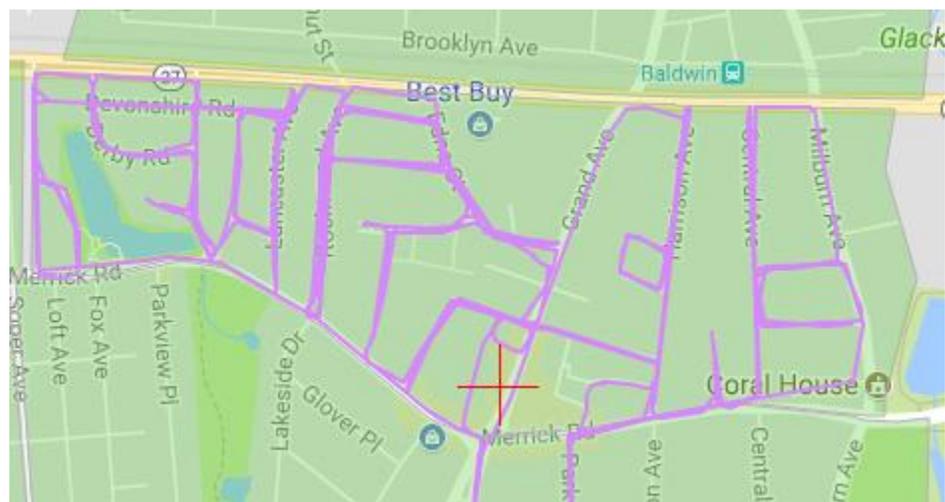
Additionally, for the January 4th snow storm, the Highway Department utilized four (4) rental vehicles with plows and salting equipment attached. The Department found these rental vehicles to be in poor condition and two (2) of the rental vehicles broke down during snow operations.

c. Technology

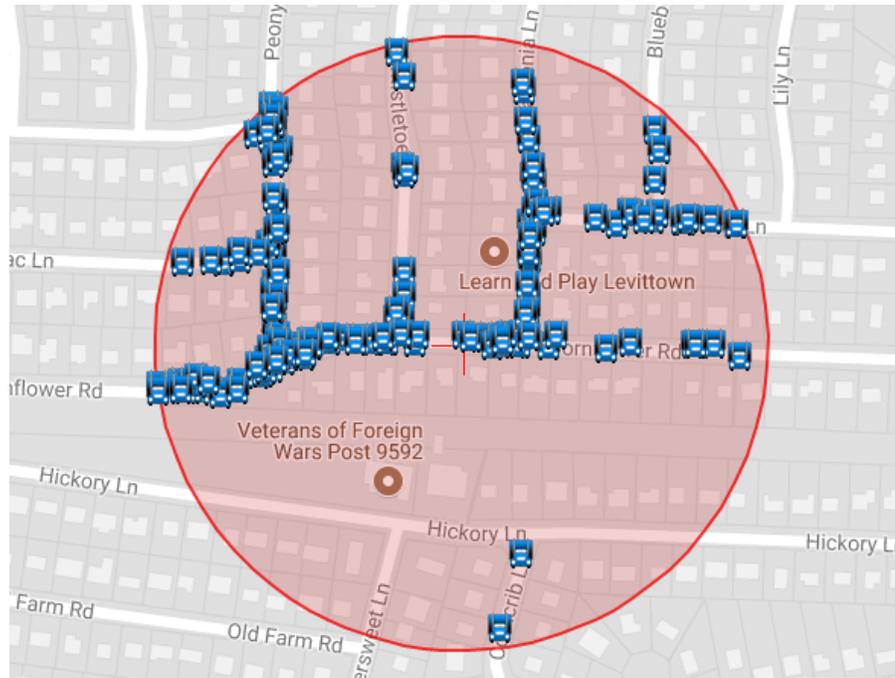
All of the Town vehicles, including those utilized for snow operations, are outfitted with GPS devices. Utilizing a web-based software program allows for the monitoring and tracking of snow plow vehicle locations and their progress through a map area.

The GPS web-based software program has the ability to provide various reports during and after a snow event. Several of the reports (including sample screen views) include:

- Path Report – displays all the paths traversed by one or more vehicles over a selected time period. The Path Report is limited to displaying a maximum of 300 vehicles at one time.



- Proximity Report – indicates vehicles that are within close proximity to an address at/during a given time period.

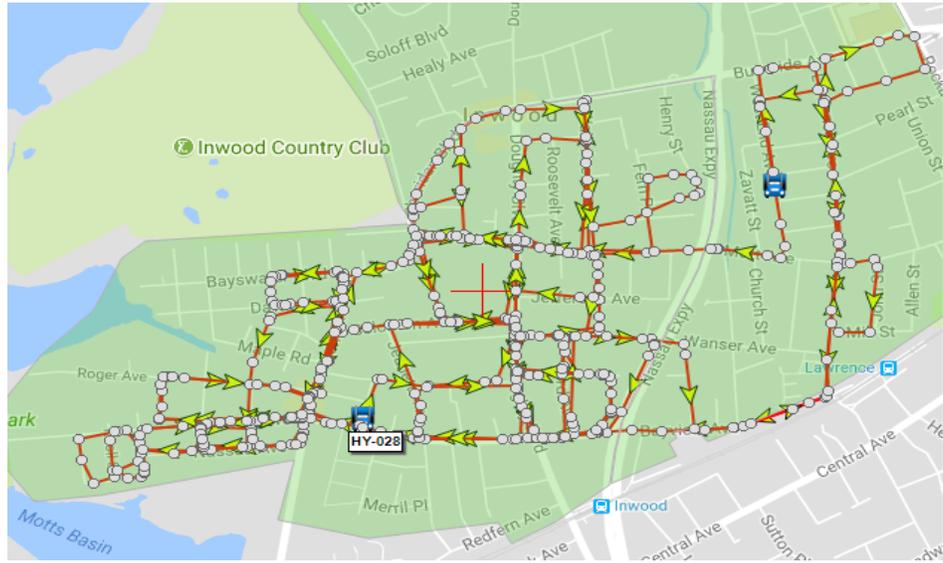


Results:

9 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

PR-219 ▼

- Route Log – indicates a vehicles route for a selected time period with address data and a map view. A data list is generated that indicates vehicle location every 30 seconds (adjustable) and the time and location for every change in direction.



- Stop Report – indicates where, when and for how long a vehicle has stopped. Stop symbols are color-coded, corresponding to the duration of the stop.

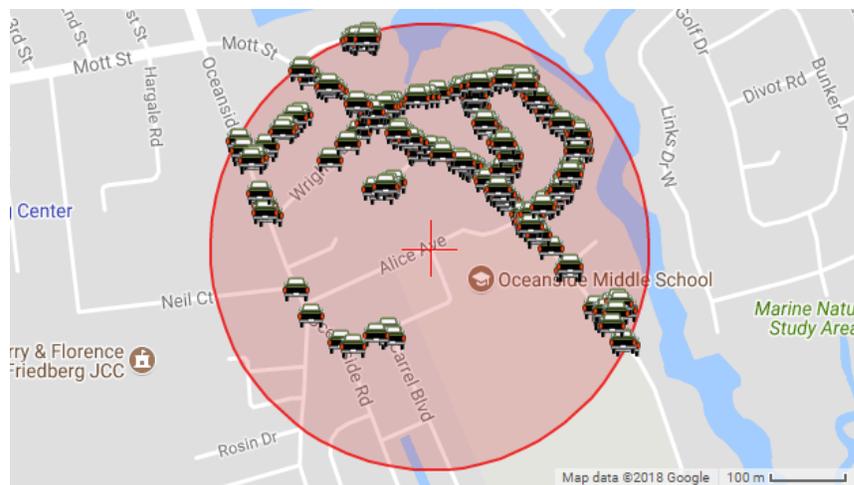


Report summary	
Time Period:	01/04/2018 12:00AM to 01/04/2018 11:45PM
Display Stops Longer Than:	3 min(s)
Item Name:	HY-029
Stop Color Legend	
Green	>= 10s & < 15 min
Yellow	>= 15 & < 60 min
Orange	>= 60 min
Blue	Start of Day
Summary	
Number of Stops	30
Total Stop Time	0d 10h 10m
Total Travel Time	0d 13h 34m
Total Time	0d 23h 45m

The GPS software is certainly helpful to monitor vehicle location and progress, but it is not able to provide information regarding the quality of the plow operation. Visual inspection by foreman and Supervisors is still essential for the snow operations.

A review of the GPS information for several of the highest area of complaints (Oceanside and Franklin Square) was conducted.

There were 55 complaints logged for map area 0-10. Running the Proximity Report for a road central to map area O-10 (Alice Ave) determines that there was a total of 16 vehicles that passed through the map area; six (6) of the vehicles spent extended periods of time within the map area, presumably plowing snow.



Results:

16 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

PR-055 ▼

Based upon the amount of vehicles/equipment that provided snow removal to this area, the number of complaints appears excessive. The quality of the plowing effort in this map area is suspect.

Map area O-12 had 53 complaints logged. Running a similar Proximity Report for a roadway central to this map area (Wanamaker St.) indicates that four (4) vehicles passed through this area; two (2) of the vehicles spent significant time within the map area.



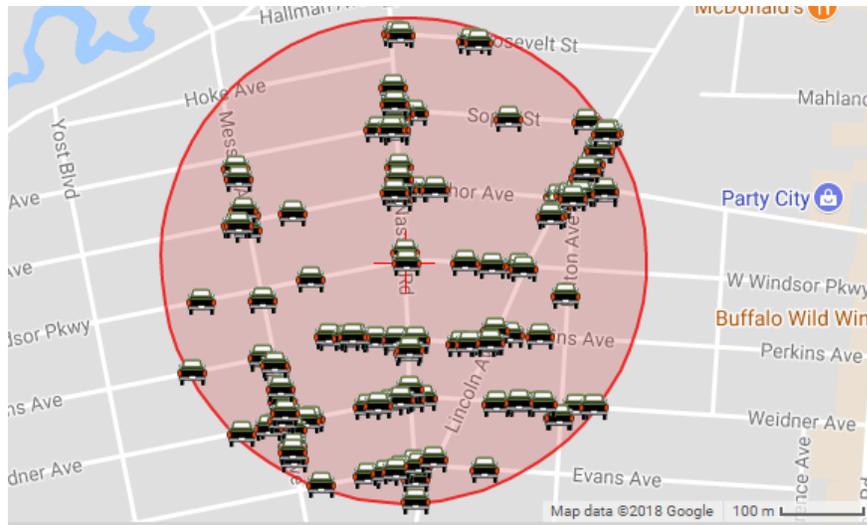
Results:

4 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

PR-055 ▼

Considering the limited number of vehicles/passes for snow removal to this map area, the frequency of plowing is likely the issue.

Map area O-5 had 52 complaints logged. Running a similar Proximity Report for a roadway central to this map area (W. Windsor Pkwy) indicates that 14 vehicles passed through this area; five (5) of the vehicles spent significant time within the map area.



Results:

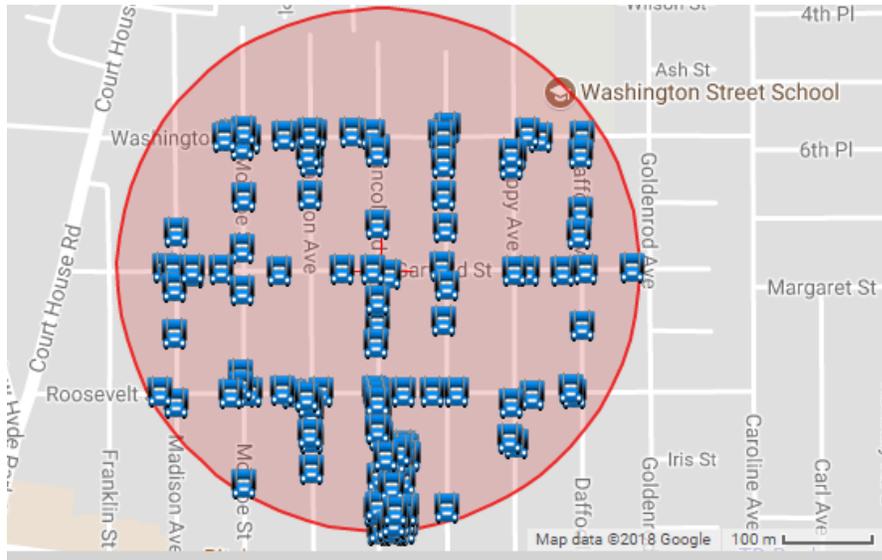
14 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

Based upon the amount of vehicles/equipment which provided snow removal to this area, the number of complaints appears excessive. The quality of the plowing effort in this map area is suspect.

As the Franklin Square area had a significant number of complaints, the majority from two (2) map areas, the GPS data for these two (2) map areas was reviewed.

Map area FS-2 had 67 complaints logged. Running a similar Proximity Report for a roadway central to this map area (Garfield St) indicates that six (6) vehicles passed through this area; only (1) of the vehicles spent significant time within

the map area. However, the proximity report indicates that the one (1) vehicle made four (4) passes of all roads in this map area.



Results:

6 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

HY-102 ▼

More than 500 points were returned for this item. Please select one time range to view on the map.

06:00AM to 11:59AM ▼

This vehicle completed a full pass of all roadways in this map area between 12a-6a, between 6a-12p, between 12p-6p, and between 6p-12a (Friday January 5th). The intensity, duration and amount of snow fall was likely the main contributing factor for these complaints.

Map area FS-4 had 64 complaints logged. Running a similar Proximity Report for a roadway central to this map area (Plane Ave) indicates that 26 vehicles passed through this area; two (2) of the vehicles spent significant time within the map area.



Results:

26 items were near this location during the time period on 2018/01/04. Please select one item to view on the map.

Considering the limited number of vehicles/passes for snow removal to this map area, the frequency of plowing is likely the issue. (Note: as Franklin Ave is a main north-south travel route, a higher number of vehicles passing through this area is not unexpected.)

d. Departmental Communication

A primary location for monitoring snow operations is the Highway Department’s Roosevelt Facility. A snow “command center” has been established which is comprised of several workstations for monitoring the GPS program, monitoring and distributing the complaints received through the snow program complaint system, communicating with foreman and supervisors, and tracking snow equipment breakdowns and repairs/return to service.

The Commissioner and Deputy Commissioner of the Highway Department work out of the command center during a snow event. They have with them

administrative staff assigned to the workstations. Supervisors periodically check in at the command center for direct communication and to review GPS and complaint reports.

Of note, neither the Sanitation Department nor the Parks Department have staff assigned to the command center. Communication occurs periodically between the Commissioners (and other responsible staff) of the various Departments.

e. Dead-ends and Cul-de-Sacs

Dead-end roadway plowing is unique to each map area depending upon the plow vehicle assigned to the area. If the map area is assigned a larger plow vehicle (dump truck with plow, garbage truck with plow, etc.) the dead-end roadways will be plowed by a different smaller vehicle (pick-up truck) or by utilizing a frontend loader. This is necessary due to the limited maneuverability of the larger plow vehicle. In this case, dead-end roadways might not be plowed until well after other roadways within the same map area.

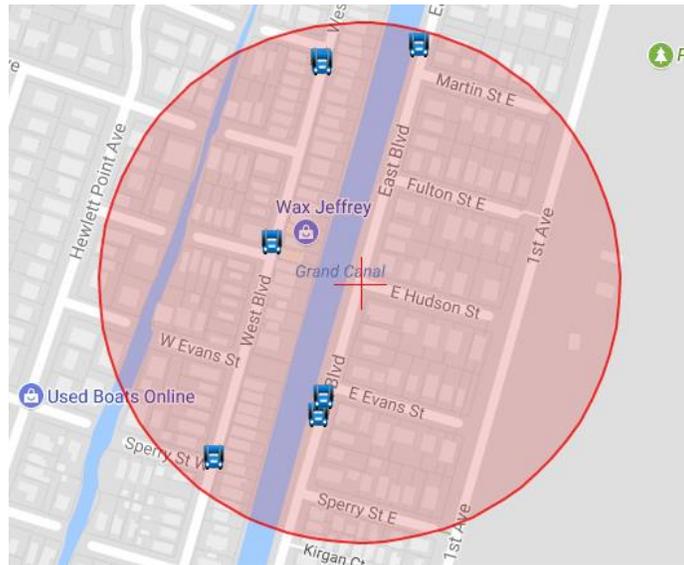
If the map area is assigned a smaller plow vehicle (pick-up truck), that same vehicle will be responsible for plowing the dead-end roadways within the assigned map area. The dead-end roadways will be plowed after completion of the priority and residential/secondary through streets.

Based upon observations during January 4th snow operations, a number of dead-end streets/cul-de-sacs were not plowed prior to the assigned plow vehicle leaving the map area. A potential reason for this occurring was the unsuitability of the snow plow vehicle assigned to the map area. As an example, the Bay Park area is covered within map area H-06 and includes many narrow

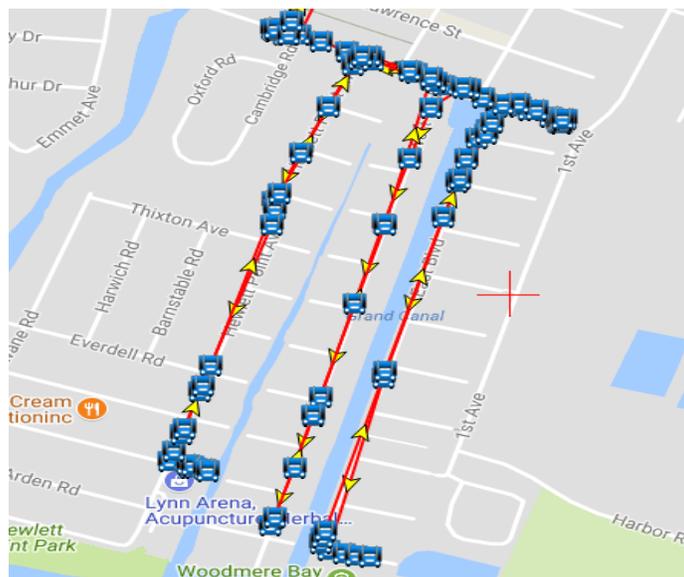
and dead-end streets. The assigned plow vehicle is a dump truck that is limited in maneuverability.

Both the Proximity Report and Route Log Report indicate limited ability of the larger plow vehicle to access the dead-end streets.

Proximity Report (vicinity of East Blvd, Bay Park)



Route Log Report (East Blvd, Bay Park)



The Bay Park area was visited by the Supervisor in the evening of January 4th and the unplowed dead-ends noted. Later that evening additional plow vehicles were dispatched to this location, but again, several of the vehicles were large garbage trucks that would have difficulty maneuvering in this area. Eventually several pick-up plow vehicles responded to this area.

f. Commuter and Commercial Parking Fields

The plowing of the LIRR commuter parking lots create unique challenges and the activity is time sensitive. Commuter lots need to be sufficiently clear in time to allow use by LIRR passengers for their morning commute. However, if significant snow accumulation occurs after the LIRR morning peak, snow plowing operations would be limited to clearing the travel aisles. This will result in varying amounts of snow being piled up behind/around the parked vehicles. For the January 4th snow storm, plowing of the commuter lots was deferred until well after the evening peak LIRR travel time. With the majority of vehicles removed from the lots, snow plows could clear both the travel aisles and the parking spaces.

The commercial parking lots have a similar challenge as the commuter lots, snow plowing activities limited by parked vehicles. They do not have the same time sensitivity as the commuter lots as they do not get the same early morning use but their availability for use can directly impact the businesses they serve. For the January 4th snow storm, plowing of the commercial lots was deferred until the early hours of the morning of January 5th, well after any businesses that had opened on January 4th had closed. Again, with the majority of vehicles removed from the lots, snow plows could clear both the travel aisles and the parking spaces.

VI. Community Communication/Complaints

Providing information to the public is a vital part of snow operations. Residents need to know how they can help facilitate snow removal, and what to expect in terms of a response to winter storms.

General snow storm information is provided on the Town website (<https://www.toh.li/highway-department>) regarding parking on roadways, sidewalk snow removal, prohibitions against throwing or blowing snow on to streets, request to clear storm drain inlets, etc.

Mass media and reverse-911 calling capabilities may be utilized to notify residents when extreme weather conditions force the suspension of Town services (ie. solid waste collection) or other scheduled functions/meetings.

During storms, call centers will be staffed appropriately to take calls from residents. At the direction of the Commissioner of the Department of Highways, the “snow program” call centers are activated to receive resident calls, complaints and concerns. Telephone calls made during working hours (Monday – Friday / 9 am to 4:45 pm) will be received by one of the following four (4) agencies: Town Helpline, Highway Department, Town Board, and, when call volume warrants, the Department of General Services. During non-business hours, telephone calls are received by the Public Safety Department. All of the previously mentioned agencies have access to the snow program. Telephone call information is entered into the snow program and electronically transmitted to the Highway Department.

Town residents have the ability to directly enter their complaint/concern directly into the snow program through the Town website. This is a storm specific form and is only available during storm events. When activated, the snow response form can be found at the following website address:

<https://toh.li/storm-response-form>

A sample of the online snow program resident complaint/concern form is provided in Appendix G. The IT Department must make the form “live” for use by residents and will subsequently deactivate the form some period of time after the storm event.

Once a complaint is received, the Highway Department staff reviews the complaint and either assigns it to a Highway Supervisor or directs it through the snow program system to the appropriate Department (Sanitation or Parks) for follow-up action. Staff from both the Sanitation Department and Parks Department is assigned to monitor the snow program at remote locations.

The snow program has the capability to visually represent complaint locations through a mapping feature. A sample of the mapping capability of the program is represented below. The red dot is indicative of a complaint location.



The Highway staff manning the snow program will print complaint information, compile the information and forward this information to the appropriate supervisor for review and action. Complaints received during the height of a snow storm are not immediately acted upon, as it would be detrimental to the operation as a whole

to respond to individual complainants before completing salting or plowing of the full complement of Town roadways. The Commissioner of Highways and senior supervisors, at their discretion, will use complaint information to direct salt or plow operators to problem areas. Foremen and snowplow operators are to follow the direction of the Commissioner of Highways and senior supervisors when conducting snow operations, they should not be responding to or following the direction of any other party.

During and after the snow storm of January 4th, the Town received 3831 snow-related complaints. Not all of these complaints were for issues/areas that fall within Town responsibility (ie “non-jurisdiction”). When adjusting for non-jurisdiction complaints, there were 3660 complaints received applicable to Town snow operations.

A summary of the complaints by geographic area is presented in the table below.

TABLE 6 – RESIDENTS COMPLAINTS BY GEOGRAPHIC REGION

Town Area	Number of Complaints Received	Town Area	Number of Complaints Received
Oceanside	423	Bethpage	21
Levittown	285	Garden City South	20
East Meadow	246	Lynbrook	17
Franklin Square	231	North Valley Stream	16
Merrick	196	Barnum Island	11
Woodmere	183	East Atlantic Beach	11
Bellmore	173	South Valley Stream	10
Seaford	169	Harbor Island	10
Elmont	161	Salisbury	9
Hewlett	146	North Wantagh	8
Wantagh	140	South Hempstead	8
West Hempstead	213	Lakeview	8

Baldwin	116	Rockville Centre	8
North Woodmere	107	Baldwin Harbor	7
Valley Stream	103	Lawrence	6
North Bellmore	86	North Baldwin	6
Uniondale	80	Long Beach	4
Roosevelt	79	Floral Park	4
Westbury	55	Point Lookout	4
Inwood	48	Freeport	3
North Merrick	44	Island Trees	2
Island Park	39	Garden City	1
Cedarhurst	31	Atlantic Beach West	1
Lido Beach	29	Meadowmere	1
Atlantic Beach	28	Plainedge	1
Bay Park	28	South Bellmore	1
East Rockaway	22	South Merrick	1

Included as Appendix H is a complete log of all the complaints received. Note that the individual's name (first and last) as well as their house number has been removed from the log.

Further review of some of the highest complaint areas (Oceanside, Levittown, and Franklin Square) by map area indicates that a large portion of the complaints come from a few of the map areas:

- Oceanside – 14 map areas total; 55% of complaints from 5 map areas.
- Levittown – 24 map areas total; 41% of complaints from 5 map areas.
- Franklin Sq – 9 map areas total; 55% of complaints from 2 map areas.

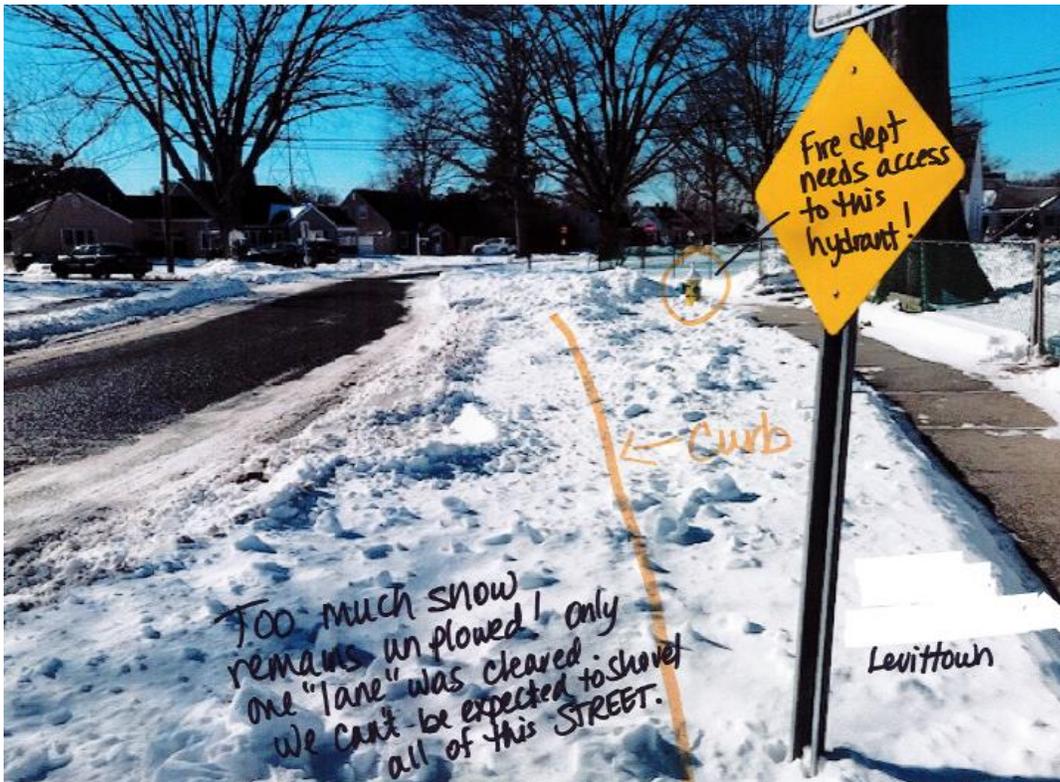
It is no surprise that the success of snow operations is directly dependent upon the quality of the plowing by the vehicle operator; but review of the data indicates that significant improvement can be achieved with improved operations in targeted map areas (and the associated vehicle operator).

Some of the most frequent concerns/complaints expressed by residents include: Roadway not widened; plow driver follows the same path each time plowing the road; Dead-end roads/cul-de-sacs ignored, not plowed at all; intersections difficult to navigate, mounds of soft snow left in intersections; and, plow driver addresses specific complaint but ignores readily apparent adjacent problems/issues.

In reviewing the complaints received from Town residents, of particular concern was the high number received the following week after the snow storm. The snow ended late afternoon January 4th; the Highway Department worked throughout the day on Friday and continued to address problem locations during the weekend (January 6th and 7th). However, a significant number of complaints continued to be received the following week. Between Monday January 8th and Thursday January 11th, in excess of 1,000 additional complaints were received and entered into the snow program.

While Highway Department field crews worked the weekend of January 7th/8th, administrative staff was not assigned to work that weekend. The Highway crews were able to work towards resolving complaints received January 4th and 5th, but there was no formal review and distribution of complaints received over the weekend to the field staff.

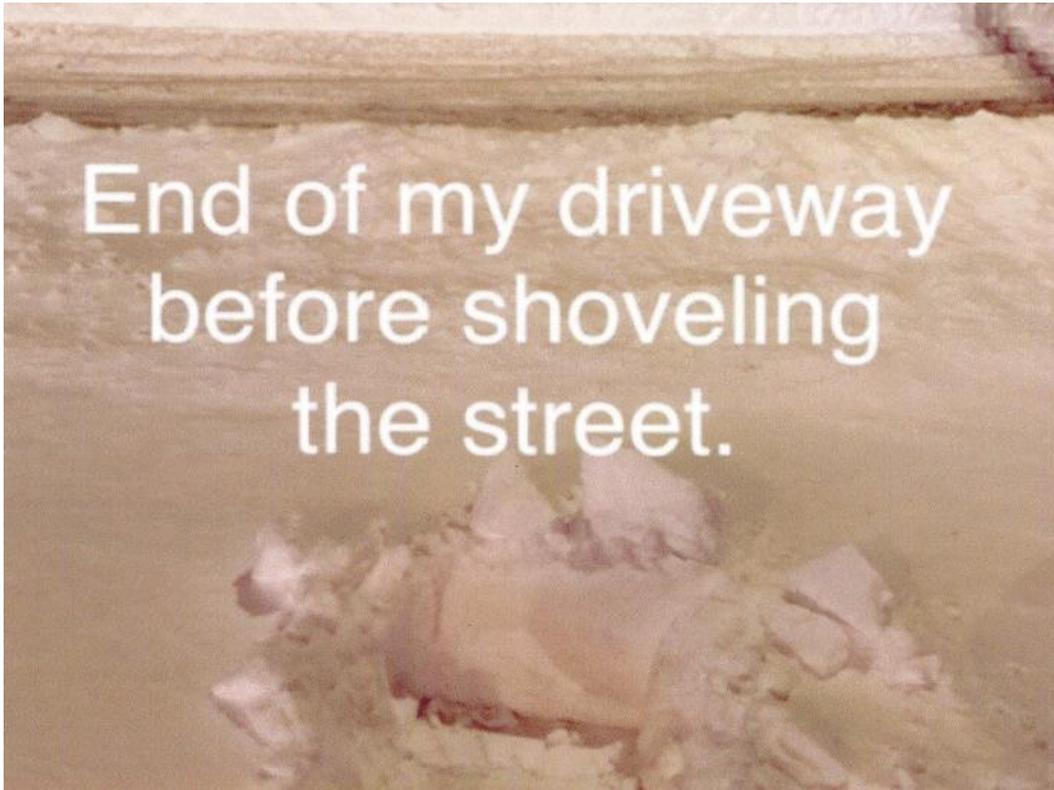
The Supervisor's Office received a number of e-mails from residents after the snow storm providing photographs documenting some of the frequent complaints. A sampling of the photographs is provided on the following pages.



Issue: Roadway not widened.



Issue: Roadway not widened.



Issue: Roadway not widened.



Issue: Roadway not widened.



Issue: Dead-end/cul-de-sac not plowed.



Issue: Dead-end/cul-de-sac not plowed.



Issue: Plow driver follows same path each pass.



Issue: Plow driver follows same path each pass.



Issue: Intersection not cleared.

One of the most frequent concerns/complaints in the removal of snow from Town roadways is snow being deposited in residential driveways during plowing operations. Just as certain as the storms are, the certainty is that some property owners will be displeased because of snow being plowed in front of their already cleared driveways. As plows travel along streets, the snow accumulated on the plow blade has no place to go but on to the adjacent areas. The more snow that has fallen, the greater the problem will be. It should be understood that the Town cannot plow out the end of private driveways, nor can the Town crew plow private property.

VII. Recommended Follow-Up Actions (Immediate)

The common thread throughout the majority of these recommendations is enhanced accountability and establishing a clear chain-of-command. The vehicle operator/snow plow driver, through all the levels of supervision, up to and including the Commissioner of Highways, must be accountable for the performance of their assigned responsibilities.

In this regard, there was immediate follow-up by the Town Supervisor and senior staff directly with the Commissioner of Highways the night of January 4th. There were several field meetings at locations within the Town to review the quality of the snow plowing efforts. It was obvious that there were needed improvements to the snow operations. This was verbally relayed to the Commissioner of Highways.

The Commissioners of the involved Departments (Highway, Sanitation and Parks) were directed to have direct follow-up meetings with applicable staff members responsible for map areas and general geographic areas for which snow plowing was visually observed to be deficient.

a. Snow Operations Single-Point of Control

Though snow operations have been stated as being solely the responsibility and under the direct control of the Commissioner of Highways; salting and plowing activities are happening as three (3) separate programs, Highway snow operations, Sanitation snow operations and Parks snow operations. This became readily apparent during the formal debrief of the Commissioner's and their senior support staff. As noted earlier, each Department assigns plow vehicles to map areas at differing ratios and supervises operations differently.

Successful snow operations can only happen with a clear chain-of-command and consistent/uniform implementation of activities.

In this regard, the Town Supervisor reconfirms the Highway Commissioners sole authority to oversee, direct and be responsible for the coordinated Town response during snow operations and report to the Supervisor. The Commissioner of Highways has been requested to immediately meet with all involved Town Departments and review in detail his expectations for the practices, procedures and methodologies to be implemented during snow response activities.

b. Snow Operations Command Center

During the snow storm of January 4, 2018, the snow operations command center at the Roosevelt Highway facility was continuously manned beginning at midnight and continuing to approximately 4 am the following day (Friday January 5th). However, the staff was solely from the Highway Department, there was no fulltime representation from the other involved Departments. There was periodic communication between the staff at the Roosevelt facility with staff of the Sanitation and Parks Departments but, again indicating that the snow response was being conducted as three (3) separate operations, limited direct coordination of activities. Resident complaints were forwarded to the involved Departments through the Snow Program but feedback as to response to the complaints was lacking.

In this regard, the Town Supervisor has directed that each of the primary Departments involved in snow operations (Highway, Sanitation and Parks) have responsible staff assigned to work from the Roosevelt Highway Facility command center during a snow event. There is to be direct communication between

Departments and constant feedback regarding complaint response and resolution.

Further, the Town Supervisor has directed that appropriate administrative staff man the snow program work station(s) at all times that Highway (or other involved Department's) work crews are actively engaged in snow operations (pre-storm, during storm and/or post-storm).

c. Snow Operations Management and Supervision

The designation of map area responsibilities by Department is appropriate for determining the number of staff and equipment required. However, based upon the review of complaints from the January 4, 2018 snow storm, a more consistent inspection and supervision effort is necessary. Foremen assigned to each maintenance area should be employees of the Highway Department, directly reportable to the Commissioner of Highways and his senior supervisory staff. The supervisors assigned to oversee the maintenance area foreman must also be employees of the Highway Department and directly reportable to the Commissioner of Highways.

All Town employees involved in snow operations must be accountable for their responsibilities.

In this regard, the Town Supervisor has directed that the Commissioner of Highways develop a written snow operations supervisory plan, establishing chain-of-command reporting structure and indicating employee name, title, and area of responsibility, for each supervisory level.

d. Operational Procedures for Different Snow Storm Intensities

Considering the extensive differences when comparing snow storms, there should be practices and/or procedures developed that may be implemented dependent upon the specific predicted or actively experienced snow conditions. The procedures shall serve as an aide to the Commissioner, supervisors and foreman to ensure essential actions are taken. Variations to these procedures may be made by the Commissioner of Highways to best meet the demands of changing storm events. Discussions with the Commissioner of Highways indicates that there are limited variations in current snow response actions based upon the predicted storm, but they are not formalized and documented.

A limited review of other municipal snow response plans/manuals finds that many include “levels of response” based upon the snow storm conditions. As an example, such levels of response could include:

Five (5) levels of response are planned for:

- Level 1- Limited De-icing – salting priority roadways, hills, schools, etc; XX salting vehicles mobilized/dispatched...
- Level 2- Full De-icing – salting all Town roadways; XXX salting vehicles mobilized/dispatched...
- Level 3 - Limited Plowing - Less than X” of snow predicted, temperatures rising and/or changing over to rain; plowing priority roadways, schools, hills, etc.; XX plow vehicles mobilized/dispatched...
- Level 4 - Full Plowing - X” or more of snow; XXX plow vehicles mobilized/dispatched...

- Level 5- Full Plowing Plus – X” or more of snow, blizzard like conditions, long duration snow event, etc.; XXX plow vehicles mobilized/dispatched; contractor assistance for parking fields (possibly roadways); snow hauling considered; etc.

In this regard, the Town Supervisor has directed that the Commissioner of Highways develop written snow operations practices and procedures formally establishing a framework for preparation and response activities based upon the predicted and actually occurring snow storm conditions.

e. Map Area Coverage

The results of the snow response efforts during the January 4, 2018 storm clearly indicate that, while the majority of employees expended great effort, the residents were dissatisfied. The length of time to complete “one pass” of plowing for the full complement of Town roadways was stated as approximately five (5) to six (6) hours (variable depending upon the severity/intensity of the snow fall). Considering the rate of snow fall during the height of the January 4th storm, upwards of 8” – 10” of snow could accumulate on a roadway between passes. This accumulation will create extremely hazardous travel conditions. The extended time period between plow passes results in more difficult travel conditions for motorists and a more difficult plowing operation when attempting to remove greater snow accumulations with each plow pass.

Based upon the inventory of vehicle/equipment available for snow response as provided by the Departments, it is a reasonable assumption that improved snow removal would be realized with a strategic allocation of snow-fighting equipment based upon the specifics of each map area. Consideration should be given to the assignment of “large” plow vehicles (dump truck or garbage truck) to cover priority roads and other wider roads and “smaller” plow vehicles (pick-

up truck with plow) to cover dead ends, narrow roads and clean up intersections. Front end loaders should be also allocated for improved snow response for dead-ends.

In this regard, the Town Supervisor has directed that the Commissioner of Highways review the inventory of all existing snow operations vehicles/equipment and develop a written map area salt and snow plow coverage plan. The coverage plan must consider the unique features/conditions of each map area and operability limitations of snow vehicles/equipment.

If the Commissioner of Highway determines a significant deficiency of vehicles/equipment, he shall provide both a recommended map area salt and snow plow coverage plan based upon existing available inventory; as well as a recommended plan for supplementing the existing vehicle/equipment inventory to provide suitable map area coverage.

f. Increase Participation of Current Town Employees in Snow Operations

Each of the Departments was requested to provide the total number of current existing employees as of December 2017/January 2018. The following is a summary of the information provided.

	Highway	Sanitation	Parks	Total
Full-Time	176	335	367	878
Part-Time and Seasonal	23	60	395	478
Sub-Total	199	395	762	1356
Temporary	62	0	0	62
Total	261	395	762	1418

As documented previously, the total number of employees who participated in snow operations for the January 4th storm was 358, approximately 25% of the Departments total staff (including available temporary employees). Of course, there will be classes of employees that are not suitable for or do not have the required skills to participate in snow response activities, but there appears to be a large untapped pool of potential employees for snow operations.

In post-storm discussions with the Commissioners, there was no consistent practice applied across Departments for contacting/calling-in employees for snow operations; and formal documentation identifying employees contacted and the employees' response could not be provided by all Departments.

In this regard, the Town Supervisor has directed the Commissioner of Highways to conduct a detailed review of each Department's roster of employees to identify potential candidates for participation in snow operations. This review should be undertaken through the Commissioner of each Town Department. At the request of the Commissioner of Highways, the various Department Commissioners should formally canvass all employees to determine their interest in becoming involved in snow operations. If they are not interested, they should be asked to share the reasons why. Each Commissioner will provide a written list of those employees interested in participating in snow operations and noting any special qualifications (ie. if the employee possesses a CDL). With this information, the Commissioner of Highways can determine the adequacy of the number of available employees in regard to the Town's snow operation needs.

Should the Commissioner of Highways believe there to be a shortage of employees for snow operations, a plan shall be formulated and/or proposed to provide an incentive for the participation of additional current employees,

including the potential incentive of a higher rate of pay for part-time employees who obtain a CDL and participate in snow operations.

The Commissioner of Highways shall conduct this formal canvassing of all Town employees annually, at mid-year prior to snow season, to have in-place a regularly-updated listing of all employees interested and available for snow operations.

Training opportunities and information for all participants in snow operations can be found through various trade associations, such as the Snow and Ice Management Association (SIMA), and colleges/universities, such as Rutgers' Office of Continuing Professional Education offering a course in snow and ice removal. The Commissioner of Highways shall seek out available training opportunities and make recommendations regarding employee participation.

g. Vehicle/Equipment Repair Locations and Staffing (Mechanics)

As previously mentioned, the prior Town Administration consolidated all vehicle/motorized equipment maintenance at two (2) locations, East Meadow Water Department facility and Merrick Sanitation facility.

It is inefficient and time consuming to attempt to tow, when a break-down occurs, a vehicle involved in snow operations to only the East Meadow or Merrick locations, especially considering the breakdown has occurred during a snow storm and potentially a significant distance from either facility.

Similar to the allocation of mechanics to various Town maintenance facilities during the January 4th snow storm, the Town Supervisor has directed that my Chief of Staff prepare a formal list of Town facilities that should be staffed and utilized for the repair of vehicles/equipment.

h. Post-Storm Reports

To facilitate accountability for various responsibilities/activities regarding snow operations, the Town Supervisor has directed that the following reports shall be required.

- i. Foreman/Supervisors Post-Storm Inspection Report – at the conclusion of salting and/or plowing operations, maintenance area foremen and next level supervisors shall be required to update as necessary and submit a final Daily Report which provides vehicle/equipment identification numbers and the driver/operator name associated with each map area. By submitting the final Daily Report, the foreman and supervisors are required to acknowledge that they have performed a final inspection of all Town roadways within their area of responsibility, and all salting/plowing operations have been satisfactorily completed.

- ii. Highway Commissioner Post-Storm Report - The Commissioner of Highway shall review all Daily Reports, storm program complaints and GPS data post-storm and provide to the Supervisor a written report within one (1) week of each snow event that summarizes: weather event/snow fall; describes snow response activities (when initiated, duration, etc.), list of employees involved in operation (designating full-time, part-time, seasonal and temporary); list of vehicles/equipment utilized; identification of equipment breakdowns and repairs; complaint data by map area and maintenance area; and, any recommended changes, modifications, etc. to snow operations. As part of the post-storm review, the Commissioner shall directly conduct interviews with any supervisor, foremen and/or plow operator responsible for a map area and/or maintenance area with an excessive number of complaints.

VIII. Recommended Follow-Up Actions (Longer-Term)

a. Map Area Review

As previously mentioned in this report, map areas were developed approximately 50 years ago. Considering the extent of residential development, changes in size and type of vehicle used for snow operations, and advancements of technology, a detailed evaluation of the map areas should be undertaken. The number of lane-miles of roadway and the land area (square miles) encompassed within each map must be determined and considered in the re-establishment of map area boundaries. The number of dead-end streets/cul-de-sacs within each map area should be documented.

Additionally, with the exception of the designated priority roadway(s) within the existing map areas, the individual snow vehicle operator determines the order of plowing of roadways within a map area. The advancement of the plowing operation through the map area is likely not being performed as efficiently as it could be and there is an increased chance of a roadway being missed.

In this regard, the Town Supervisor has directed the Commissioner of Highways to undertake a detailed study to determine the appropriateness of existing map areas and where necessary to “right-size” the map areas based upon roadway lane-miles, land area, dead-end streets, etc. Further, utilizing readily available technology and software programs, the Commissioner of Highways shall determine and establish the most efficient vehicle travel route for each individual map area.

IX. How Residents/Motorists Can Help

As stated in the Introduction to this report, winter storms can be trying for everyone, motorists, residents and snowplow operators alike. There are some actions that residents can take to assist the Town's snow response efforts.

a. Residents should move all parked vehicles off of the roadway to allow for a better plowing operation.

b. Clear snow from sidewalks as soon as possible, but not later than 24 hours after snow has ceased to fall. This is to prevent the snow from turning into an icy hazard for pedestrians or forcing them to walk in the street.

c. Do not place snow removed from driveways or sidewalks onto the street. Aim snow blowers into front yards away from sidewalks, the park strip and the street. Ice and rocks, as well as powder snow are blown out many feet. This material can hit parked or passing cars, which can cause damage to those vehicles as well as possible accidents. Also, snow blown onto the street will freeze and become a slick spot, which may easily cause accidents. Place snow, shoveled into your driveways by snow plows, onto the area between your sidewalk and curb, the park strip; but, not into the street or gutter. Otherwise, if this pile of snow is shoveled back into the street, it will freeze and become hidden by new snow. Then, when snowplows or other vehicles hit that pile of ice, they can be shoved back into the traffic lanes and can easily hit passing or parked cars. Also, placing this snow into the gutter will slow down or block drainage. Sidewalk snow removal should be deposited in your yard area, not on the street.

d. Remove snow from around fire hydrants near your home. Help save lives and property.

e. Clear snow from around mailboxes. Clearing the snow from your mailbox will help keep mail delivery vehicles from blocking traffic and help prevent accidents.

f. Safe Driving Habits for Motorists. Sharing the road with snowplows can create special challenges for motorists. You can be better prepared by following a few simple tips when you encounter a snowplow:

- Be visible - keep headlights on at all times when travelling.
- Slow down - snowplows in residential areas move at much slower speeds than other vehicles.
- Be cautious when approaching a snowplow from behind - plows may cause snow clouds that reduce visibility.
- Stay well back until the snowplow operator can safely pull over to let you pass.

X. Appendices

Appendix A – Priority Roadways

Appendix B – Map Areas

Appendix C – Snow Vehicles/Equipment List

Appendix D – Commuter and Commercial Parking Fields

Appendix E – Daily Report Form (Blank)

Appendix F - Snow Equipment Active v. Reported Inventory

Appendix G – Snow Program On-line Resident Complaint Form

Appendix H - Snow Complaint Log

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