

**Follow-Up Audit  
Snow Removal**

July 1999

**City Auditor's Office**

**City of Kansas City, Missouri**



July 26, 1999

Honorable Mayor and Members of the City Council:

This follow-up audit of the Public Works Department's snow removal program was initiated in accordance with the City Auditor's Office policy of assessing the city's progress in addressing problems identified in previous audit work.

Our February 1994 audit found problems with city overtime expenses, private contractor costs, and insufficient monitoring of provisions and expenses related to reimbursement requests from city departments. Finally, we found that snow and ice removal services were routinely under-budgeted, forcing the city to rely on contingency funds.

Our follow-up found that the department has made significant progress in improving the administration of the program. The February 1994 audit had focused on management issues and strategies to control costs. Public Works has adopted recommendations and continues to consider practices that offer potential opportunities for administrative and operational improvements. The department has also improved its contracting practices with the Parks and Recreation and Water Services departments. Finally, we found that snow and ice control expenditures have been more realistically budgeted.

The draft follow-up report was sent to the city manager and the director of public works on June 25, 1999 and their responses are included as appendices. We appreciate the courtesy and cooperation extended to us during this project by city staff. This follow-up audit was conducted by Douglas Jones, Chanel Goodwin-Watkins, and Nancy Hunt.

Mark Funkhouser  
City Auditor



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# Follow-Up Audit: Snow Removal

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## **Follow-Up Audit: Snow Removal**

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## Introduction

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### Audit Objectives

This follow-up audit of the Public Works Department's snow removal program was conducted pursuant to Article II, Section 13 of the Charter of Kansas City, Missouri, which establishes the Office of the City Auditor and outlines the city auditor's primary duties.

A performance audit is an objective and systematic examination of evidence to independently assess the performance of a government organization, program, activity, or function in order to provide information to improve public accountability and facilitate decision-making by parties with responsibility to oversee or initiate corrective action.<sup>1</sup> A follow-up audit is an examination for the purpose of reporting on the extent to which an agency has dealt with problems identified in a prior audit.

This follow-up was designed to answer the following questions:

- Has the Public Works Department taken steps to improve its management of the snow and ice control program?
- Have controls over contracting practices between the Public Works, Parks and Recreation, and Water Services departments for snow and ice operations been improved?
- Has the Public Works Department taken steps to improve the management of private plowing contracts?
- Does the city adequately budget for snow and ice control activities?

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### Scope and Methodology

This follow-up audit was not designed or intended to be another full scale audit of the snow removal program; rather, it was designed to

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<sup>1</sup> Comptroller General of the United States, *Government Auditing Standards* (Washington: U.S. Government Printing Office, 1994), p. 14.

determine the progress made in addressing issues raised in our original 1994 audit.

The audit was performed in accordance with generally accepted government auditing standards, with the exception of the completion of an external quality control review of the office within the last three years.<sup>2</sup> Our methods included:

- Reviewing our February 1994 audit and selected workpapers, and the Audit Report Tracking System (ARTS) reports submitted in response to the audit.
- Interviewing staff from the Public Works, Parks and Recreation, and Water Services departments.
- Examining city records, procedures, and documents related to the snow removal program.

We issued a letter to management informing them of some minor billing errors and suggestions for improving their cost analysis report regarding snow operations. No information was omitted from this report because it was deemed privileged or confidential.

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## **Background**

Under the city code, the director of public works is responsible for snow and ice control.<sup>3</sup> The department's street and traffic division coordinates city snow and ice control activities performed by the division; the Water Services and Parks and Recreation departments; and private contractors.

The city begins plowing on arterial routes when snow accumulation reaches a plowable depth of approximately two inches. Arterial routes are plowed from curb-to-curb down to bare pavement. Residential snow plowing is implemented when snow accumulation reaches approximately two inches, depending on ground and air temperatures, time of day, day of the week, and weather forecasts. A 12-foot wide path down the center of residential streets is plowed to provide access to major streets. Ice control efforts begin when there is frozen moisture on the pavement or snow and ice conditions are anticipated. Chemicals and sand are applied to the city's major streets, to locations on residential streets known to be

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<sup>2</sup> The last review was performed in April 1995. A peer review is planned for the current year.

<sup>3</sup> Code of Ordinances, Kansas City, Missouri, Section 2-462.

dangerous in icy conditions, and to other slick locations identified by emergency personnel or the public.

During fiscal year 1999, the city was divided into 113 routes for snow and ice control purposes. Of these, 58 routes were classified as arterial, a designation that includes major arterial, secondary arterial, and collector streets. City forces - personnel from the street and traffic division, and Water Services and Parks and Recreation departments - are responsible for major arterial routes, while private contractors plow secondary arterial and collector routes and virtually all the residential routes. (See Exhibit 1.)

Exhibit 1. Snow Plowing Routes – Fiscal Year 1999

Operators	Arterial Routes	Lane Miles <sup>4</sup>	Residential Routes	Miles
Street & Traffic	14	620	1	30
Parks & Recreation	8	585		
Water Services	9	535		
Private Contractors	27	960	54	1,620
<b>Total</b>	<b>58</b>	<b>2,700</b>	<b>55</b>	<b>1,650</b>

Source: Public Works Department Records.

### Citizens Express Satisfaction with Snow Removal

In the most recent citizen survey, citizens ranked snow removal as one of the top three important government services, behind fire and police services. Citizens were also asked to rate the quality of snow removal from major streets. Approximately half the respondents to the survey rated the city's snow removal efforts as good or excellent. Citizen ratings of the quality of snow removal operations remained relatively unchanged between the 1996 and 1998 surveys. (See Exhibit 2.)

Exhibit 2. Citizen Survey - Quality of Snow Removal Service

Rating	1996	1998
Good + Excellent	54.7%	50.4%
Fair	30.1%	32.7%
Poor	13.8%	14.1%
Don't Know	1.3%	2.8%
<b>Total</b>	<b>99.9%</b>	<b>100.0%</b>
Margin of Error (+/-)	2.6%	2.2%

Sources: 1996 and 1998 Citizen Surveys.

<sup>4</sup> Lane miles refer to the mileage of a street multiplied by the number of lanes being plowed.

### **Summary of the 1994 Audit**

Our February 1994 audit of the Public Works Department's snow removal program found high city overtime expenses, increasing private contractor costs, inadequate monitoring of provisions and expenses related to Parks and Recreation Department reimbursement requests, and routine under-budgeting for snow and ice removal services.

The audit made 15 recommendations directed towards strengthening the program's management controls, reducing costs, improving contract administration, and appropriating adequate funding. The prior audit recommendations are included in Appendix A. Audit Report Tracking System (ARTS) reports submitted by management are included in Appendix B.

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## Findings and Recommendations

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### Summary

Our follow-up audit found that the Public Works Department's efforts mirrored a number of best practices that should strengthen the snow and ice control program. The February 1994 audit focused on management issues and strategies to control costs. Public Works has implemented recommendations and continues to consider practices that offer potential opportunities for administrative and operational improvements. The department is improving its contracting practices with the Parks and Recreation and Water Services departments. Finally, we found that snow and ice control expenditures have been more realistically budgeted.

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### Management Continues to Adopt Program Improvements

We reviewed the administration and management of the city's snow and ice control program using a best practices framework developed by Minnesota's Office of the Legislative Auditor.<sup>5</sup> These practices describe administrative and operational practices that could help save time, reduce labor, control costs, increase service levels, or generally improve the department's ability to efficiently and effectively manage the program. (See Exhibit 3.) Our follow-up work determined that the department has adopted a number of these best practices.<sup>6</sup>

#### Exhibit 3. Best Practices for Snow and Ice Control: Administration and Management

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- Adopt written snow policies
  - Encourage cooperative services and facilities
  - Contract for services when appropriate
  - Measure performance and maintain records
  - Plan for equipment replacement
- 

Source: *Snow and Ice Control: A Best Practices Review*, Office of the Legislative Auditor, State of Minnesota, May 1995.

**Best Practice: Adopt written snow policies.** "Writing and adopting policies to guide snow and ice control programs can protect the

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<sup>5</sup> *Snow and Ice Control: A Best Practices Review*, Office of the Legislative Auditor, State of Minnesota, May 1995.

<sup>6</sup> Although the Minnesota study included both administrative and operational best practices, we limited our analysis to the administrative practices since our original audit focused on management issues and strategies to control costs.

jurisdiction, help employees, and instruct the public.”<sup>7</sup> Written policies might address when plowing, salting or sanding operations begin; establish route priorities and procedures; provide guidance on the use of materials; and permit the flexibility to change procedures in response to weather and road conditions. Policies may also familiarize employees and contractors with the city’s standards and expectations. Written policies can also educate residents about what to expect from the city’s snow and ice control program.

**Written snow removal procedures developed.** The street and traffic division has developed written policies on snow removal procedures. While the information suggested for inclusion in a written snow policy is not contained within a single document, the major items have been addressed.

Each year, the division issues a *Snow and Ice Control Program Manual* that defines the route responsibilities of city and contract forces, describes when operations will begin and end, establishes priorities and plowing standards for various classifications of streets, and provides information related to the city’s snow ordinance. This manual, as well as the written contracts with private contractors, allows staff to make operational changes in response to weather and road conditions.

Division staff developed a *Salting and Plowing Manual* that contains plowing techniques and guidelines for the use of materials. This manual is being updated and is expected to be distributed to all snow removal personnel for the fiscal year 2000 snow season. Public Works personnel met in April 1999 to evaluate snow operations and discuss potential changes for next year.

**Overtime policy issued.** In response to one of our original recommendations, the division issued a *Snow and Ice Removal Overtime Policy* in 1994. We reviewed snow removal labor hour reports for three storms in fiscal years 1993 and 1999 and found that the percentage of overtime hours charged to snow removal activities has decreased since the prior audit. (See Exhibit 4.) However, changes between regular and overtime hours or direct and support hours could be attributed to other factors such as day of week or time of day that a storm arrives or the intensity of a storm.

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<sup>7</sup> *Snow and Ice Control: A Best Practices Review*, p. xi.

Exhibit 4. Overtime as Percent of Total Labor Hours<sup>8</sup>

Overtime	FY93	FY99
Total Overtime	52.0	34.4
Administrative Support Overtime	7.4	2.9
Field Support Overtime	14.7	8.8

Source: Street and Traffic Division records.

**Best Practice: Encourage cooperative services and facilities.**

Cooperative agreements provide local governments with a way to coordinate services, share resources, control expenditures, avoid duplication of services, eliminate unnecessary purchases of facilities and equipment, and use employees more effectively.<sup>9</sup>

**Cooperative agreements developed.** The Public Works Department has developed cooperative agreements with the cities of Raytown and Gladstone, Missouri, and has drafted an agreement with the state. These agreements could help control costs. Agreements with Raytown and the Missouri Department of Transportation (MODOT) entail sharing salt domes. These jurisdictions should provide about \$200,000 for dome construction costs. The draft agreement with MODOT also includes the use of a fueling station. The department and Gladstone will trade street maintenance and snow removal responsibilities for a subdivision that is partially located in Kansas City and Gladstone.

The department also has agreements with the Parks and Recreation and Water Services departments for snow and ice removal activities. Plowing and salting performed by these departments reduces Public Works' need to purchase additional equipment and hire more staff for snow removal operations.

**Best Practice: Contract for services when appropriate.** Contracting can be cost-effective when the level of equipment or staff needed to provide a desired level of service exceeds that which is available. By contracting with private vendors, other departments, or other local jurisdictions, local governments may supplement the level of snow and ice removal service provided by city crews and equipment.

**Public Works contracts for snow and ice control.** City staff and equipment are focused on major arterial routes because these routes require a more immediate response. The city contracts for residential, secondary arterial, and local collector routes because it lacks sufficient equipment and staff to do all of the work.

<sup>8</sup> Based on three storms for each year reviewed.

<sup>9</sup> *Snow and Ice Control: A Best Practices Review*, pp. 14-15.

The department's contracting practices and contract specifications include a number of practices identified for effective contracting. The department's contract specifications contain service level and expected performance requirements. Division staff inspect contractor routes to ensure performance. The division does not compare its activities to those of private contractors; however, the division does compare its activities with those performed by the Parks and Recreation Department.

**Best Practice: Measure performance and maintain records.** Local governments may be able to improve snow and ice control services by measuring the effectiveness and efficiency of services provided. Measuring performance allows an entity to determine whether it has met its intended goals and objectives, and if necessary, adjust procedures or practices.<sup>10</sup> Costs of snow and ice control can be compared across districts, geographic areas, or over time once goals are set and standards adopted.<sup>11</sup> Maintaining records on the use of equipment and materials, labor hours, responses to storms, and costs allows local governments to make informed decisions about operational needs and provides information that can be used to evaluate the efficiency and effectiveness of the program.<sup>12</sup>

**Department developed performance measures and benchmarks.** The division has developed performance measures designed to evaluate its performance, but they are not yet being used by management. In 1998, the Public Works Department hired a consulting firm to conduct a benchmarking survey covering a number of department activities including snow and ice control. The survey produced one snow-related benchmark – cost per lane mile. An October 1997 internal division memo outlined several benchmarking measures based on costs or hours per lane mile and labor hour ratios.

The division's accounting section prepared a cost analysis report for the fiscal year 1999 snow season. This report is the division's first attempt at analyzing and benchmarking snow operations for a season. Generally, the report provides useful information about total costs; labor costs; labor hours for the division and the Parks and Recreation and Water Services departments; and contractor operations related to snow removal.

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<sup>10</sup> *Snow and Ice Control: A Best Practices Review*, pp. xii and 16.

<sup>11</sup> *Snow and Ice Control: A Best Practices Review*, p. 135.

<sup>12</sup> *Snow and Ice Control: A Best Practices Review*, p. 17.

Benchmarks included in the report were:

- Total cost per lane mile
- Labor hours per lane mile
- Equipment repair costs per lane mile
- Tons of salt used per lane mile
- Contractor plowing costs per lane mile

The benchmarks included were based on the length of routes. We discussed with management several ways the division could further refine their report, including the use of actual miles plowed rather than the length of the route for lane mile measures.

The department's performance measures could be improved by focusing on measures of results. These measures could include:

- Comparisons of actual to intended results
- Comparisons of service levels achieved with previous snowfalls
- Comparisons of inputs with outputs that attain specified service levels
- Timeliness of responses to complaints or slick locations.

**Division maintains records on snow and ice removal activities.** The division's accounting staff has a number of reports on division labor hours that are used to determine labor hours charged to snow and ice removal activities. The division also maintains several types of records that provide information on storm activities, contractors, slick locations, inspections, route assignments, and commodity inventories. Information from accounting and operation records were used to prepare the division's cost analysis report. Maintaining records on the use of equipment and materials, labor hours, responses to storms, and costs assists the department in evaluating the effectiveness and efficiency of its performance.

**Best Practices: Plan for equipment replacement.** "Local governments can use equipment replacement funds to help them prepare for replacing equipment that wears out or becomes obsolete. This usually involves systematically determining how long equipment can be expected to last, and setting aside funds each year to replace the equipment at the end of its useful life."<sup>13</sup> Planned equipment replacement and dedicated funding help ensure that equipment purchases occur in a timely manner and do not place an undue financial strain on

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<sup>13</sup> *Snow and Ice Control: A Best Practices Review*, pp. 14-15.

local government budgets. Jurisdictions should also purchase equipment for year-round uses whenever possible.

**Equipment upgraded despite elimination of depreciation charges.**

Since our original audit, the street and traffic division has upgraded the equipment used for snow operations. Trucks capable of simultaneously plowing and salting have been purchased. The equipment purchased by the division can also be used for activities other than snow removal. These improvements address recommendations made in the original audit.

Despite improvement in the Public Works Department's snow removal fleet, the lack of a consistent, city-wide funding plan could threaten the replacement of equipment for snow removal operations in the future. Prior to the adoption of the 1987 budget, the public works working capital fund provided for the accumulation of vehicle depreciation charges to fund vehicle replacement on an on-going basis.<sup>14</sup> Although monies have been included in the annual budget for equipment replacement, there is no consistent, citywide building of replacement reserves.

Good fleet management practices accumulate replacement reserves to encourage replacing vehicles at a point that minimizes overall costs. The equipment fund should be established in a way to ensure that funds are dedicated for equipment purchases.<sup>15</sup> If vehicle purchases must compete with other priorities in the annual budget process, replacement may be deferred increasing costs in the long run.

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## **Controls and Contract Management Improving**

### **Contracting Practices Between City Departments Are Improving**

In 1994, Public Works developed written agreements with the Parks and Recreation and Water Services departments. The agreements established eligible reimbursable expenses incurred by Parks and Recreation and Water Services related to snow removal activities. The Public Works Department is now receiving annual service resolutions from the Board of Parks and Recreation Commissioners for roadway maintenance

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<sup>14</sup> Code of Ordinances, Kansas City, Missouri, Sections 2-1678 through 2-1682.

<sup>15</sup> *Managing Public Equipment*, American Public Works Association, Chicago, Illinois, 1989, p. 50.

services, including snow removal, as required by the city code.<sup>16</sup> Our original audit recommended that a reimbursement policy be developed and service resolutions be submitted on an annual basis.

**Inter-departmental billings are reviewed.** In response to a recommendation from the prior audit, the street and traffic division's accounting staff is responsible for reviewing snow removal billings from Parks and Recreation and Water Services. However, the accounting staff did not have copies of the agreements on reimbursable expenses. We reviewed snow removal billings for fiscal year 1999 and found several inaccuracies, which we discussed with management. Better communication and more interaction between staff members in all three departments responsible for preparing or reviewing billings and reimbursements could improve the accuracy of billings and payments.

### **Contract Plowing Costs Have Remained Stable**

Adjusted for inflation, total contract bid costs have remained stable since the prior audit. Actual contract bid costs for plowing arterial and residential routes one time are shown in Exhibit 5.

Exhibit 5. Cost of Plowing All Contract Routes One Time

Cost	1993	1999
Route Bid Cost	\$130,163	\$156,932
Mobilization Fee <sup>17</sup>	11,505	12,476
Retainer Fee <sup>18</sup>	8,700	8,300
<b>Total Cost</b>	<b>\$150,368</b>	<b>\$177,708</b>
<b>Total Cost Adjusted for Inflation</b>	<b>\$176,231</b>	<b>\$177,708</b>

Sources: Street and Traffic and Purchases and Supplies Divisions' records.

**Contracts with renewal provisions are being used.** In fiscal year 1999, 15 of 18 contracts let in fiscal year 1998 were renewed. Contract costs increased only \$144 in 1999. The department has not yet had enough experience with contract renewals to determine whether they will be beneficial from a cost savings standpoint. At a minimum, the city will not incur the costs of two full-scale bid processes. A contract with

<sup>16</sup> Section 2-462 (5) of the Kansas City, Missouri, Code of Ordinances requires the Board of Parks and Recreation Commissioners to annually adopt and submit a service resolution to the director of public works in order to receive maintenance services for the roadway system under the jurisdiction of the board.

<sup>17</sup> Arterial contractors are paid a mobilization fee of one hour per piece of approved equipment assigned to each route awarded to the contractor. Residential contractor mobilization fees are equal to 5 percent of the lump sum bid for plowing each awarded route one time.

<sup>18</sup> Each contract year contractors are paid a one-time retainer fee equal to \$50 per vehicle assigned to each snow plowing route awarded to the contractor.

renewal options also provides the city and contractors with stability. Use of multi-year contracts was recommended in the prior audit.

**More routes were made available for bid.** In fiscal year 1995, the division reported that a number of major arterial routes were made available for contractor bid. The division subsequently reported little success or satisfaction with contractor plowing of major arterial routes. Because these routes require a more immediate response, city crews continue to be responsible for major arterial routes. All secondary arterial and collector routes as well as residential routes are made available for contractor bid. Our original audit recommended bidding all snowplowing routes.

**There was little change in competition.** Despite management efforts, the overall level of competition in bidding for snow removal remains about the same. In our original report we suggested more contractors be solicited and competition improved to minimize costs. In fiscal years 1993 and 1998, 55 contractors were solicited for snow removal bids. The number of contractors bidding on routes decreased from 23 to 19 during the same period; however, the percentage of routes bid on increased from 80 percent to 94 percent and the average number of bids per route slightly increased from 1.6 to 1.8.

**Minor improvements could be made to contract enforcement.** We reviewed a limited number of inspection records and found two contractors were not penalized although they began plowing more than two hours after being notified. The penalty clause in the contract states that contractor payments will be reduced by 10 percent if contractors do not begin plowing their assigned route within two hours. Our prior audit recommended stricter enforcement of contract penalty provisions.

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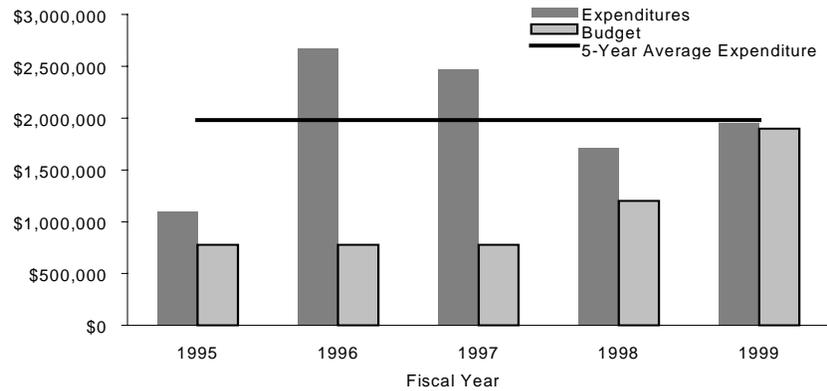
## **Snow and Ice Control Expenditures Are Budgeted More Realistically**

Our prior audit found that the snow and ice control program was routinely under-budgeted and the contingency fund was used to pay for snow expenses rather than including a realistic amount for this activity in the city's annual budget. Between fiscal years 1995 and 1999, \$5.4 million was budgeted for snow removal activities while actual expenditures totaled \$9.9 million.

In fiscal years 1999 and 2000 the program budget was \$1.9 million; an amount roughly equal to the five-year average expenditure. (See Exhibit 6.) Basing the snow and ice control program's budget on an average of historical expenditures provides a more realistic budget and decreases the

reliance on the city’s contingency fund to pay for expected city operations.

**Exhibit 6. Snow and Ice Control Budgets and Expenditures FY 95 – 99**



Sources: Kansas City Financial Management System and Adopted Budgets.

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## Recommendations

1. The director of public works should further refine and report key performance measures comparing the snow and ice control performance of the division, other departments, and contractors.
2. The city manager should develop and implement an equipment replacement funding program to provide for the systematic funding and replacement of city vehicles and equipment.
3. The director of public works should ensure that agreement and contract provisions are enforced.



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## **Appendix A**

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### **1994 Audit Recommendations**



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1994 Audit Recommendations

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1. The Manager of the Street and Traffic Division should develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.
  2. The Manager of the Street and Traffic Division should continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ the simultaneous salting and plowing technique.
  3. The Manager of the Street and Traffic Division should determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who could participate in snow removal activities and determining cost reductions associated with the change.
  4. The Manager of the Street and Traffic Division should reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division personnel. When feasible, the Manager of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.
  5. The Superintendent of the Public Works Department's Motor Equipment Division should conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.
  6. The Manager of the Street and Traffic Division should investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the Manager if the contractor was able to negotiate a contract period for longer than one year.
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7. The Manager of the Street and Traffic Division should solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's costs of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.
  8. The Manager of the Street and Traffic Division should identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle-intensive routes and identifying the cost/benefit of purchasing enough equipment to plow 10 more routes. Analysis should include cost analysis of productivity increases which might result from using larger trucks, more motor graders, and new plowing technology.
  9. The Manager of the Street and Traffic Division should carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.
  10. The Manager of the Street and Traffic Division should ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.
  11. The Manager of the Street and Traffic Division should work with representatives of the Parks and Recreation and Water and Pollution Control departments to establish a policy of the expenses to be reimbursed for snow removal, including rates and form of billing.
  12. The Manager of the Street and Traffic Division should assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.
  13. The Board of Parks and Recreation Commissioners should annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.
  14. The Street and Traffic Division Manager should continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitude for the purpose of providing a standard for comparison. Analysis should be based on historical expenditure and weather information and should include development of an estimate of fixed costs for storms.
  15. The City Manager should discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.
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## **Appendix B**

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### **Audit Report Tracking System (ARTS) Reports**

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<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b> Snow Removal Program	<b>2. This Report Date</b> 6-Oct-94		
<b>3. Department</b> Public Works	<b>4. Last Report Date</b> N/A		
<b>5. Department Head</b> George E. Wolf, Jr.	<b>6. Contact Person/Phone</b> Larry Frevert - 274-2481		
<b>7. Audit Release Date</b> 7-Feb-94	<b>8. ARTS Number</b> 94-2-1		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. In Progress	10/6/94	10. In Progress	10/6/94
2. In Progress	10/6/94	11. In Progress	10/6/94
3. In Progress	10/6/94	12. Implemented	10/6/94
4. In Progress	10/6/94	13. Implemented	10/6/94
5. Implemented	10/6/94	14. In Progress	10/6/94
6. In Progress	10/6/94	15. In Progress	10/6/94
7. In Progress	10/6/94		
8. In Progress	10/6/94		
9. In Progress	10/6/94		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: In Progress, A policy has been developed and will be evaluated over the upcoming snow &amp; ice season. We continue to disagree with the significance which the auditor attaches to Phase I and Phase II. Important work, associated with a snow and ice emergency continues to occur well after Phase I and II are lifted.</p> <p>Recommendation No. 2: Continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ the simultaneous salting and plowing technique.</p> <p>Status: In Progress, Planning for the 1994-95 Winter includes use of Engineering Division and Motor Equipment Division personnel, in addition to personnel from the Traffic Operations Section. Also personnel from the Codes Administration, Neighborhood and Community Services Department and the Water &amp; Pollution Control Department will be used for contract plowing inspection. Routes and conditions will be identified when simultaneous plowing and salting should be applied. Currently, only 4 single axle dump truck and the 9 tandem axle dumptrucks meet the criteria of legal weight compliance, adequate motor horsepower and adequate hydraulic pump capacity to perform simultaneous salting and plowing. These capabilities will be considered in the assignment of routes. Further, new dump trucks are being specified to have capabilities of satisfying these criteria.</p>			

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<b>Audit Report Tracking System</b>	
<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	6-Oct-94
<b>10. Recommendations Included in this Report (continued)</b>	
<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who participate in snow removal activities and determining cost reductions associated with the change.</p> <p>Status: In Progress, An estimate has been made that an additional 73 snow equipment operators and 9 supervisory employees would be required to satisfy this recommendation. The initial estimated cost is \$1,520,000 to produce an overtime reduction savings of \$396,000. Final estimates will be delayed until available personnel from other departments can be solicited.</p>	
<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division personnel. When feasible, the Manager of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.</p> <p>Status: In Progress, This is more of a practice than a policy. We will evaluate this practice over the upcoming winter. We will assess current conditions and forecasted weather, and, if feasible, perform shoulder push back on regular time.</p>	
<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p> <p>Status: Implemented, This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't reasonable) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We will include this proposal in our 1995-96 budget submittal.</p>	
<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p> <p>Status: In Progress, This years contract plowing is being bid with a 2 year renewable option based on the increase in the "consumer price index."</p>	
<p>Recommendation No. 7: Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.</p> <p>Status: In Progress, We have advertised all routes for contract bidding this year. We will assign routes based on: 1) Availability of plows (City &amp; Contract), 2) Priority of route for early plowing and 3) Cost of contract plowing vs. city plowing.</p>	

**Audit Report Tracking System**

**Audit Title:** Snow Removal Program  
**Report Date:** 6-Oct-94

**10. Recommendations Included in this Report (continued)**

Recommendation No. 8: Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle-intensive routes and identifying the cost/benefit of purchasing enough equipment to plow 10 more routes. Analysis should include cost analysis of productivity increases which might result from using larger trucks, more motor graders and new plowing technology.

Status: In Progress, We have evaluated proposals to allow a combination of Public Works and Water/Pollution Control vehicles to plow all "A" routes with contractors plowing all the "B" routes. Also, we evaluated a proposal to plow 10 of the residential routes with Public Works pickups. The estimated savings for the first proposal are approximately \$75,000 vs. an annual cost of approximately \$600,000. The estimated cost and savings comparison for the city to purchase 20 new pickups with snow plows and the 40 new operators to run their pickups around the clock is \$920,000 vs. \$45,000.

Recommendation No. 9: Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.

Status: In Progress, This year's contract plowing of residential streets will be bid based on the payment criteria of 3 years ago. The bids from this criteria will be evaluated against those of the most recent two years.

Recommendation No. 10: Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.

Status: In Progress, This will be done. Only after contract plowing has been performed can our response to this recommendation be evaluated.

Recommendation No. 11: Work with representatives of the Parks and Recreation and Water and Pollution Control departments to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.

Status: In Progress, We have met with representatives of the Parks and Recreation Department and Water/Pollution Control Departments and reached agreement on costs to be reimbursed. Cost assessment bench marks and production measurements are being developed.

Recommendation No. 12: Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.

Status: Implemented, The Division Accountant has been assigned this responsibility.

Page 4 of 4	
<b>Audit Report Tracking System</b>	
<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	6-Oct-94
<b>10. Recommendations Included in this Report (continued)</b>	
<p>Recommendation No. 13: Annually submit to the Public Works Director a <u>service resolution</u> in accordance with the Administrative Code.</p> <p>Status: Implemented, The Parks and Recreation Department has approved this resolution for FY 94-95 and submitted it to the Public Works Department.</p>	
<p>Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitude for the purpose of providing a standard of comparison. Analysis should be based on historical expenditure and weather information and should include development of an estimate of fixed costs for storms.</p> <p>Status: In Progress, Under development for inclusion in 1995-96 budget submittal.</p>	
<p>Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.</p> <p>Status: In Progress, The City Manager has, in the past, advocated increased funding, through the regular budgeting process, for snow removal. It has not survived past Council deliberations in the budget setting process, but we will continue to submit it.</p>	

<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b> Snow Removal Program	<b>2. This Report Date</b> 24-Apr-95		
<b>3. Department</b> Public Works	<b>4. Last Report Date</b> 7-Oct-94		
<b>5. Department Head</b> George E. Wolf, Jr.	<b>6. Contact Person/Phone</b> Larry Frevert - 274-2481		
<b>7. Audit Release Date</b> 7-Feb-94	<b>8. ARTS Number</b> 94-2-2		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. Implemented	10/10/94	10. In Progress	4/24/95
2. In Progress	4/24/95	11. In Progress	4/24/95
3. Rejected	4/24/95	12. Implemented	10/6/94
4. In Progress	4/24/95	13. Implemented	10/6/94
5. Implemented	10/6/94	14. In Progress	4/24/95
6. Implemented	10/11/94	15. In Progress	4/24/95
7. Implemented	10/11/94		
8. In Progress	10/6/94		
9. Implemented	10/11/94		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: Implemented, A policy has been implemented but not fully tested because of the light winter to this point We continue to disagree with the significance which the auditor attaches to Phase I and Phase II. Important work, associated with a snow and ice emergency continues to occur well after Phase I and II are lifted.</p> <p>Recommendation No. 2: Continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ the simultaneous salting and plowing technique.</p> <p>Status: In Progress. Planning for the 1994-95 Winter included the use of Engineering Division and Motor Equipment Division personnel, in addition to personnel from the Traffic Operations Section. Also personnel from the Codes Administration, Neighborhood and Community Services Department and the Water &amp; Pollution Control Department were to be used for contract plowing inspection. The response we received from other Department's personnel for voluntary contractor plowing inspection work was limited. Personnel not normally assigned to field maintenance type work found their time impacted by their own Departmental priorities. Routes and conditions have been identified when simultaneous plowing and salting should be applied. We now have 9 single axle dump trucks and 9 tandem axle dump trucks that meet the criteria of legal weight</p>			

<b>Audit Report Tracking System</b>		Page 2 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	17-Feb-95	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>compliance , adequate motor horsepower and adequate hydraulic pump capacity to perform simultaneous salting and plowing. This is an increase of 5 trucks since October 1994. These capabilities have been considered in the assignment routes. Eight more new replacement vehicles with this capability are currently being built. All further new dump trucks are being specified to have capabilities of satisfying these criteria.</p>		
<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who</p>		
<b>Status:</b>	<p>Rejected, We were able to solicit 1 additional snow equipment employee from within all department The additional employee along with allowing for 22 employees from Traffic Operations and Motor Equipment shows an additional 72 snow equipment operators and 9 supervisory employees still required to satisfy this recommendation. The estimated cost is still \$1,520,000 to reduce the overtime reduction savings of \$396,000. We feel this is economically unfeasible.</p>	
<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division personnel. When feasible, the Manager of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.</p>		
<b>Status:</b>	<p>In Progress, This is more of a practice than a policy. We will evaluate this practice yet this winter if a plowable storm occurs. We will assess current conditions and forecasted weather, and if feasible, perform shoulder push back on regular time.</p>	
<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p>		
<b>Status:</b>	<p>Implemented, This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't reasonable) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We included this proposal in our 1995-96 budget submittal.</p>	
<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p>		
<b>Status:</b>	<p>Implemented, This years contract plowing was bid with a 2 year renewable option based on the increase in the "consumer price index." Motorgrader rates were 9% higher than 93-94 averaging \$131.71 per hour and truck rates were 6% higher at \$98.33 per hour. Contact negotiations will take place in August on the first year renewal clause. If the CPI stays consistent with the past few years, we should experience less of a price increase.</p>	
<p>Recommendation No. 7: Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to</p>		

**Audit Report Tracking System**

**Audit Title:** Snow Removal Program

**Report Date:** 17-Feb-95

**10. Recommendations Included in this Report (continued)**

ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.

Status: Implemented, We advertised all routes for contract bidding this year. We assigned routes based on: 1) Availability of plows (City & Contract), 2) Priority of route for early plowing and 3) Cost of contract plowing vs. city plowing. In one of our districts, we assigned our snowplow operators with commercial plow contractors to plow in tandem, thus eliminating the need for additional inspection. There has been no significant snowfall this winter to evaluate this method.

Recommendation No. 8: Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle-intensive routes and identifying the cost/benefit of purchasing enough equipment to plow 10 more routes. Analysis should include cost analysis of productivity increases which might result from using larger trucks, more motor graders and new plowing technology.

Status: In Progress, We have evaluated proposals to allow a combination of Public Works and Water/Pollution Control vehicles to plow all "A" routes with contractors plowing all the "B" routes. Also, we evaluated a proposal to plow 10 of the residential routes with Public Works pickups. The estimated savings for the first proposal are approximately \$75,000 vs. an annual cost of approximately \$600,000. The estimated cost and savings comparison for the city to purchase 20 new pickups with snow plows and the 40 new operators to run their pickups around the clock is \$920,000 vs. \$45,000. We have been unable to find additional drivers for these proposals. We have installed "Driveway Gates" on our Motor Graders to prevent plowed snow from blocking driveways. We are also purchasing a new type of truck bed that also works as a spreader and has added safety features over conventional spreaders. We have also installed calcium chloride tanks on the new spreaders for application at the spinner. This allows for better distribution of the liquid calcium onto the salt and is less corrosive to the spreader.

Recommendation No. 9: Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.

Status: Implemented, This year's contract plowing of residential streets was bid based on the payment criteria of 3 years ago. The bids from this criteria was evaluated against those of the most recent years. Since bid specifications changed over the past few years, an adequate comparison to the last few years contractor prices is not totally feasible. However, in comparing the 93-94 average residential contractor bid price per route for a 3 to 6 inch snowfall with contractor bid prices per route for 94-95, on average there was a \$110 decrease in price per route.

Recommendation No. 10: Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.

Status: In Progress, This will be done. Only after contract plowing has been performed can our response to this recommendation be evaluated.

Recommendation No. 11: Work with representatives of the Parks and Recreation and Water and Pollution

<b>Audit Report Tracking System</b>		Page 4 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	17-Feb-95	
<b>10. Recommendations Included in this Report (continued)</b>		
Control departments to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.		
<b>Status:</b>	In Progress, We have met with representatives of the Parks and Recreation Department and Water/ Pollution Control Departments and reached agreement on costs to be reimbursed. Cost assessment bench marks and production measurements are being developed.	
Recommendation No. 12: Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.		
<b>Status:</b>	Implemented, The Division Accountant has been assigned this responsibility.	
Recommendation No. 13: Annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.		
<b>Status:</b>	Implemented, The Parks and Recreation Department has approved this resolution for FY 94-95 and submitted it to the Public Works Department.	
Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitude for the purpose of providing a standard of comparison. Analysis should be based on historical expenditure and weather information and should include development of an estimate of fixed costs for storms.		
<b>Status:</b>	In Progress, Target budget and decision package submitted from historical data from past years storms. Cost benchmarks will continue to be established for varying storm magnitudes.	
Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.		
<b>Status:</b>	Partially Implemented: The budgeted amount for snow removal has been increased from \$255,000 in 1993-94 to \$778,544 in 1994-95 and to \$777,069 in 1995-96. The City will continue to strive toward budgeting a larger share of average snow removal costs and relying less on the contingent appropriation.	

<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b> Snow Removal Program	<b>2. This Report Date</b> 30-Oct-95		
<b>3. Department</b> Public Works	<b>4. Last Report Date</b> 24-Apr-95		
<b>5. Department Head</b> George E. Wolf, Jr.	<b>6. Contact Person/Phone</b> Larry Frevert - 274-2364		
<b>7. Audit Release Date</b> 7-Feb-94	<b>8. ARTS Number</b> 94-2-3		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. Implemented	10/10/94	10. In Progress	10/6/95
2. In Progress	10/6/95	11. In Progress	10/6/95
3. Rejected	4/24/95	12. Implemented	10/6/94
4. In Progress	10/6/95	13. Implemented	10/6/94
5. Implemented	10/6/94	14. In Progress	10/6/95
6. Implemented	10/11/94	15. In Progress	10/6/95
7. Implemented	10/11/94		
8. In Progress	10/6/95		
9. Implemented	10/11/94		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: Implemented, A policy has been implemented but not fully tested because of the light winter to this point We continue to disagree with the significance which the auditor attaches to Phase I and Phase II. Important work, associated with a snow and ice emergency continues to occur well after Phase I and II are lifted.</p> <p>Recommendation No. 2: Continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ the simultaneous salting and plowing technique.</p> <p>Status: In Progress, Planning for the 1994-95 Winter included the use of Engineering Division and Motor Equipment Division personnel, in addition to personnel from the Traffic Operations Section. Also personnel from the Codes Administration, Neighborhood and Community Services Department and the Water &amp; Pollution Control Department were to be used for contract plowing inspection. The response we received from other Department's personnel for voluntary contractor plowing inspection work was limited. Personnel not normally assigned to field maintenance type-work found their time impacted by their own Departmental priorities. Routes and conditions have been identified when simultaneous plowing and salting should be applied. We now have 9 single axle dump trucks and 9 tandem axle dump trucks that meet the criteria of legal weight</p>			

Audit Report Tracking System		Page 2 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	30-Oct-95	
<b>10. Recommendations Included in this Report (continued)</b>		
	<p>compliance , adequate motor horsepower and adequate hydraulic pump capacity to perform simultaneous salting and plowing. This is an increase of 5 trucks since October 1994. These capabilities have been considered in the assignment routes. Eight more new replacement vehicles with this capability are currently being built. All further new dump trucks are being specified to have capabilities of satisfying these criteria.</p>	
	<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who could participate in program &amp; determine cost reductions associated with change.</p>	
<b>Status:</b>	<p>Rejected, We were able to solicit 1 additional snow equipment employee from within our department. The additional employee along with allowing for 22 employees from Traffic Operations and Motor Equipment shows an additional 72 snow equipment operators and 9 supervisory employees still required to satisfy this recommendation. The estimated cost is still \$1,520,000 to reduce the overtime reduction savings of \$396,000. We feel this is economically unfeasible.</p>	
	<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division personnel. When feasible, the Manager of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.</p>	
<b>Status:</b>	<p>In Progress, This is more of a practice than a policy. We will evaluate this practice yet this winter if a plowable storm occurs. We will assess current conditions and forecasted weather, and if feasible, perform shoulder push back on regular time.</p>	
	<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p>	
<b>Status:</b>	<p>Implemented, This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't possible) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We included this proposal in our 1995-96 budget submittal.</p>	
	<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p>	
<b>Status:</b>	<p>Implemented, Last years contract plowing was bid with a 2 year renewable option based on the increase in the "consumer price index." Motorgrader rates were 9% higher than 93-94 averaging \$131.71 per hour and truck rates were 6% higher at \$98.33 per hour. Contact negotiations will take place in August on the first year renewal clause. If the CPI stays consistent with the past few years, we should experience less of a price increase.</p>	

Audit Report Tracking System	
<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	30-Oct-95
<b>10. Recommendations Included in this Report (continued)</b>	
<p>Recommendation No. 7: Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.</p>	
<b>Status:</b>	Implemented, We advertised all routes for contract bidding last year. We assigned routes based on: 1) Availability of plows (City & Contract), 2) Priority of route for early plowing and 3) Cost of contract plowing vs. city plowing. In one of our districts, we assigned our snowplow operators with commercial plow contractors to plow in tandem, thus eliminating the need for additional inspection. There has been no significant snowfall this winter to evaluate this method.
<p>Recommendation No. 8: Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle-intensive routes and identifying the cost/benefit of purchasing enough equipment to plow 10 more routes. Analysis should include cost analysis of productivity increases which might result from using larger trucks, more motor graders and new plowing technology.</p>	
<b>Status:</b>	In Progress, We have evaluated proposals to allow a combination of Public Works and Water/Pollution Control vehicles to plow all "A" routes with contractors plowing all the "B" routes. Also, we evaluated a proposal to plow 10 of the residential routes with Public Works pickups. The estimated savings for the first proposal are approximately \$75,000 vs. an annual cost of approximately \$600,000. The estimated cost and savings comparison for the city to purchase 20 new pickups with snow plows and the 40 new operators to run their pickups around the clock is \$920,000 vs. \$45,000. We have been unable to find additional drivers for these proposals. We have installed "Driveway Gates" on our Motor Graders to prevent plowed snow from blocking driveways. We are also purchasing a new type of truck bed that also works as a spreader and has added safety features over conventional spreaders. We have also installed calcium chloride tanks on the new spreaders for application at the spinner. This allows for better distribution of the liquid calcium onto the salt and is less corrosive to the spreader.
<p>Recommendation No. 9: Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.</p>	
<b>Status:</b>	Implemented, Last year's contract plowing of residential streets was bid based on the payment criteria of 3 years ago. The bids from this criteria were evaluated against those of the most recent years. Since bid specifications changed over the past few years, an adequate comparison to the last few years contractor prices is not totally feasible. However, in comparing the 93-94 average residential contractor bid price per route for a 3 to 6 inch snowfall with contractor bid prices per route for 94-95, on average there was a \$110 decrease in price per route.

Audit Report Tracking System		Page 4 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	30-Oct-95	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>Recommendation No. 10: Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.</p> <p>Status: In Progress, This will be done. Only after contract plowing has been performed can our response to this recommendation be evaluated.</p>		
<p>Recommendation No. 11: Work with representatives of the Parks and Recreation and Water and Pollution Control departments to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.</p> <p>Status: In Progress, We have met with representatives of the Parks and Recreation Department and Water Services Departments and reached agreement on costs to be reimbursed. Cost assessment bench marks and production measurements are being developed.</p>		
<p>Recommendation No. 12: Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.</p> <p>Status: Implemented, The Division Accountant has been assigned this responsibility.</p>		
<p>Recommendation No. 13: Annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.</p> <p>Status: Implemented, The Parks and Recreation Department approved this resolution for FY 94-95 and submitted it to the Public Works Department.</p>		
<p>Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitude for the purpose of providing a standard of comparison. Analysis should be based on historical expenditure and weather information and should include development of an estimate of fixed costs for storms.</p> <p>Status: In Progress, Target budget and decision package submitted from historical data from past years storms. Cost benchmarks will continue to be established for varying storm magnitudes.</p>		
<p>Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.</p> <p>Status: Partially Implemented: The budgeted amount for snow removal has been increased from \$255,000 in 1993-94 to \$778,544 in 1994-95 and to \$777,069 in 1995-96. The City will continue to strive toward budgeting a larger share of average snow removal costs and relying less on the contingent appropriation.</p>		

<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b>	<b>2. This Report Date</b>		
Snow Removal Program	1-Nov-96		
<b>3. Department</b>	<b>4. Last Report Date</b>		
Public Works	30-Oct-95		
<b>5. Department Head</b>	<b>6. Contact Person/Phone</b>		
George E. Wolf, Jr.	Jere Meredith-274-2481		
<b>7. Audit Release Date</b>	<b>8. ARTS Number</b>		
7-Feb-94	94-2-3		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. Implemented	10/10/94	9. Implemented	10/11/95
2. Ongoing	10/6/96	10. Implemented	10/6/95
3. Not Implemented	4/24/95	11. In Progress	10/6/96
4. Implemented	10/6/95	12. Implemented	10/6/94
5. Implemented	10/6/94	13. Implemented	10/6/94
6. Implemented	10/11/94	14. In Progress	10/6/96
7. Implemented	10/11/94	15. In Progress	10/6/96
8. Partially Implemented	10/6/96		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: Implemented. A policy has been implemented but not fully tested because of the light winter to this point We continue to disagree with the significance which the auditor attaches to Phase I and Phase II. Important work, associated with a snow and ice emergency continues to occur well after Phase I and II are lifted.</p> <p>Recommendation No. 2: Continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ simultaneous salting and plowing techniques.—</p> <p>Status: On going: Planning for the 1996/97 Winter includes the use of associates from the Engineering Division, Motor Equipment Division and the Traffic Operation Section. Also, associates from the Water Services Department will be utilized not only for plowing operations but to supplement our salting operation. In addition, associates from the Codes Administration, Neighborhood and Community Services will be utilized for contract plow inspection, but is on a limited basis. Associates not normally assigned to field maintenance type work still find their time impacted by their investment groups' priorities. Routes and conditions continue to be identified when simultaneous plowing and salting should be applied.</p>			

Audit Report Tracking System		Page 2 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Nov-96	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>We now have 20 single axle dump trucks and nine tandem axle dump trucks that meet the criteria of weight compliance, adequate motor horsepower and adequate hydraulic pump capacity to perform simultaneous salting and plowing. This is an increase of 11 trucks since October 1995. All further new dump trucks are being specified with capabilities of satisfying these criteria's.</p>		
<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who could participate in program &amp; determine cost reductions associated with change.</p>		
<b>Status:</b>	<p>Not Implemented. We were able to solicit 1 additional snow equipment employee from within our department. The additional employee along with allowing for 22 employees from Traffic Operations and Motor Equipment shows an additional 72 snow equipment operators and 9 supervisory employees still required to satisfy this recommendation. The estimated cost is still \$1,520,000 to reduce the overtime reduction savings of \$396,000. We feel this is economically unfeasible.</p>	
<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division associates. When feasible, the division engineer of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.</p>		
<b>Status:</b>	<p>Implemented. We evaluated this practice last winter. When practical, we held the contractors to their contract stipulations and did not release them until their routes were completed. We will continue to assess conditions and forecaster weather and when possible perform shoulder push back on regular time.</p>	
<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p>		
<b>Status:</b>	<p>Implemented, This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't possible) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We included this proposal in our 1995-96 budget submittal.</p>	
<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p>		
<b>Status:</b>	<p>Implemented, Last years contract plowing was bid with a 2 year renewable option based on the increase in the "consumer price index." Motorgrader rates were 9% higher than 93-94 averaging \$131.71 per hour and truck rates were 6% higher at \$98.33 per hour. Contract negotiations will take place in August on the first year renewal clause. If the CPI stays consistent with the past few years, we should experience less of a price increase.</p>	

**Audit Report Tracking System**

**Audit Title:** Snow Removal Program

**Report Date:** 1-Nov-96

**10. Recommendations Included in this Report (continued)**

**Recommendation No. 7:** Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.

**Status:** Implemented. We advertised all routes for contract bidding last year. We assigned routes based on: 1) Availability of plows (City & Contract), 2) Priority of route for early plowing and 3) Cost of contract plowing vs. city plowing. In one of our districts, we assigned our snowplow operators with commercial plow contractors to plow in tandem, thus eliminating the need for additional inspection. There has been no significant snowfall this winter to evaluate this method.

**Recommendation No. 8:** Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle intensive routes and identifying the cost benefit of purchasing enough equipment to plow ten more routes. Analysis should include cost productivity increases which might result from using larger trucks, more motor graders and new plowing technology.

**Status:** Partially Implemented. The analysis we provided in the October 1995, report still holds true. The cost analysis is far greater than it is currently, when you take into consideration the purchase of 20 new pickups with plows and the addition of 40 new associates. The "Driveway Gates" we installed on our Motor Graders to prevent snow from blocking driveways and intersections proved positive. The addition of the new type truck beds that also work as a spreader was not evaluated last year because they arrived too late in the season. However, we will evaluate them this year and if successful, we may order more of this type in the future. We continue to mix liquid calcium with the salt at the spreader. In addition, we will be evaluating the use of salt brine as a possible alternative to liquid calcium chloride. This is a liquid we produce from our salt supply which is more cost efficient. The cost for using salt brine is two cents per gallon as compared to 31.7 cents per gallon for liquid calcium chloride. We will be experimenting with liquid anti-icing to lower the freeze point of the pavement surface to prevent ice and snow from bonding to the pavement.

**Recommendation No. 9:** Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.

**Status:** Implemented. Last year's contract plowing of residential streets was bid based on the payment criteria of 3 years ago. The bids from this criteria were evaluated against those of the most recent years. Since bid specifications changed over the past few years, an adequate comparison to the last few years contractor prices is not totally feasible. However, in comparing the 93-94 average residential contractor bid price per route for a 3 to 6 inch snowfall with contractor bid prices per route for 94-95, on average there was a \$110 decrease in price per route.

<b>Audit Report Tracking System</b>		Page 4 of 4
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Nov-96	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>Recommendation No. 10: Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.</p> <p>Status: Implemented. We sanctioned contractors last year that did not comply with contract specifications be sanctioned according to contract stipulations.</p> <p>Recommendation No. 11: Work with representatives from Parks and Recreation and Water Services Department to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness and compliance with stated agreements.</p> <p>Status: In Progress. After meeting with representatives from the Parks and Recreation Department and the Water Services Department we reached an agreement on cost to be reimbursed. Cost assessment bench marks and productions measurements are still being developed.</p> <p>Recommendation No. 12: Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.</p> <p>Status: Implemented. The Division Accountant has been assigned this responsibility.</p> <p>Recommendation No. 13: Annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.</p> <p>Status: Implemented. The Parks and Recreation Department approved this resolution for FY 94-95 and submitted it to the Public Works Department.</p> <p>Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitudes for the purpose of providing a standard of comparison. Analysis should be based on historical expenditures and weather information and should include development of an estimate of fixed cost for storms.</p> <p>Status: On Going. Target budget and decision package submitted from historical data from past years' storms. Cost benchmarks will continue to be established for varying magnitudes.</p> <p>Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.</p> <p>Status: Partially Implemented: The budgeted amount for snow removal has been increased from \$255,000 in 1993-94 to \$778,544 in 1994-95 and to \$777,069 in 1995-96 and to \$778,544 in 1996-97. The City will continue to strive toward budgeting a larger share of average snow removal cost and rely less on the contingent appropriation.</p>		

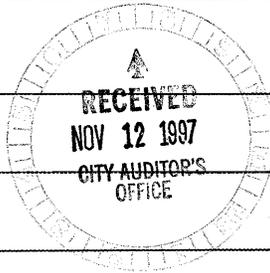
<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b> Snow Removal Program	<b>2. This Report Date</b> 1-Apr-97		
<b>3. Department</b> Public Works	<b>4. Last Report Date</b> 1-Nov-96		
<b>5. Department Head</b> George E. Wolf, Jr.	<b>6. Contact Person/Phone</b> Jere Meredith-274-2481		
<b>7. Audit Release Date</b> 7-Feb-94	<b>8. ARTS Number</b> 94-2-3		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. Implemented	10/10/94	9. Implemented	10/11/95
2. Implemented	4/1/97	10. Implemented	10/6/95
3. Not Implemented	4/24/95	11. In Progress	4/1/97
4. Implemented	10/6/95	12. Implemented	10/6/94
5. Implemented	10/6/94	13. Implemented	10/6/94
6. Implemented	10/11/94	14. In Progress	4/1/97
7. Implemented	10/11/94	15. In Progress	4/1/97
8. Implemented	4/1/97		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: Implemented, A policy has been implemented but not fully tested because of the light winter to this point We continue to disagree with the significance which the auditor attaches to Phase I and Phase II. Important work, associated with a snow and ice emergency continues to occur well after Phase I and II are lifted.</p> <p>Recommendation No. 2: Continue to utilize employees from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ simultaneous salting and plowing techniques.</p> <p>Status: Implemented: Planning for the 1996/1997 Winter includes the use of associates from the Engineering Division, Motor Equipment Division and the Traffic Operation Section. Associates from the Water Services Department will be utilized not only for plowing operations but to supplement our salting operation. In addition, associates from the Codes Administration, Neighborhood and Community Services will be utilized for contract plow inspection, but on a limited basis. Associates not normally assigned to field maintenance work still find their time impacted by their originating departments priorities and are often not available. Routes and conditions continue to be identified where simultaneous plowing and salting should be applied.</p>			

Audit Report Tracking System		Page 2 of 5
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Apr-97	
<b>10. Recommendations Included in this Report (continued)</b>		
	<p>We now have 26 single axle dump trucks and nine tandem axle dump trucks that meet the criteria of weight compliance, adequate motor horsepower and adequate hydraulic pump capacity to perform simultaneous salting and plowing. This is an increase of 12 trucks since October 1995. All further new dump trucks are being specified with capabilities of satisfying these criteria's.</p>	
	<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who could participate in program &amp; determine cost reductions associated with change.</p>	
<b>Status:</b>	<p>Not Implemented. We were able to solicit 1 additional snow equipment employee from within our department. The additional employee along with allowing for 22 employees from Traffic Operations and Motor Equipment shows an additional 72 snow equipment operators and 9 supervisory employees still required to satisfy this recommendation. The estimated cost is still \$1,520,000 to reduce the overtime reduction savings of \$396,000. We feel this is economically unfeasible.</p>	
	<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division associates. When feasible, the division engineer of the Street and Traffic Division should direct that pushback work be conducted on non-overtime shifts.</p>	
<b>Status:</b>	<p>Implemented. We evaluated this practice last winter. When practical, we held the contractors to their contract stipulations and did not release them until their routes were completed. We will continue to assess conditions and weather forecasts and when possible perform shoulder push back on regular time.</p>	
	<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p>	
<b>Status:</b>	<p>Implemented, This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't possible) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We included this proposal in our 1995-96 budget submittal.</p>	
	<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p>	
<b>Status:</b>	<p>Implemented, Last years contract plowing was bid with a 2 year renewable option based on the increase in the "consumer price index." Motorgrader rates were 9% higher than 93-94 averaging \$131.71 per hour and truck rates were 6% higher at \$98.33 per hour. Contract negotiations will take place in August on the first year renewal clause. If the CPI stays consistent with the past few years, we should experience less of a price increase.</p>	

Audit Report Tracking System		Page 3 of 5
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Apr-97	
<b>10. Recommendations Included in this Report (continued)</b>		
<p><b>Recommendation No. 7:</b> Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes, and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.</p>		
<b>Status:</b>	<p><b>Implemented with Results:</b> Street Division, District Two was selected to supervise and inspect private contractor's removal of snow on several A and B routes. The district's responsibility was to salt and inspect routes after the contractor's plowing operation.</p> <p>During the last two years the following problems were encountered:</p> <ul style="list-style-type: none"> <li>After notification several of the contractors could not respond for two (2) to three (3) hours because their equipment was based outside the Kansas City area.</li> <li>Numerous failures to notify district as request when they arrived at their appointed location. District drivers were standing-by at the location for an hour or more.</li> <li>Idle City drivers and trucks project a negative image to the public.</li> <li>Numerous contractors determined where they started plowing their appointed routes. The district then had to locate the contractor.</li> <li>A number of times the inspector returned to the district for more salt upon the return to the route the contractor could not be located.</li> <li>Several contractors had to be repeatedly cautioned to plow curb to curb.</li> </ul>	
<b>Conclusion:</b>	<p>Due to the aforementioned problems District Two found that City forces by doubling their effort in the downtown area and on streets similar to Truman Road we are more efficient on A route snow removal. Street Operation suggest the A routes be plowed by Street Operations with the assistance of Water Services. The B routes will be the responsibility of private contractors.</p>	
<p><b>Recommendation No. 8:</b> Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle intensive routes and identifying the cost benefit of purchasing enough equipment to plow ten more routes. Analysis should include cost productivity increases which might result from using larger trucks, more motor graders and new plowing technology.</p>		
<b>Status:</b>	<p><b>Implemented.</b> The analysis we provided in the October 1995, report still holds true. The cost analysis is far greater than it is currently, when you take into consideration the purchase of 20 new pickups with plows and the addition of 40 new associates. The "Driveway Gates" we installed on our Motor Graders to prevent snow from blocking driveways and intersections proved positive. The addition of the new truck beds that also work as a spreader was not evaluated last year because they arrived too late in the season. However, we will evaluate them this year and if successful, we may order more of this type in the future. We continue to mix liquid calcium with the salt at the spreader. In addition, we evaluated the use of salt brine as an alternative to calcium chloride. This is a liquid we produce from our salt supply, it is less corrosive and more cost efficient than calcium chloride. The cost for using salt brine is two (2) cents per gallon as compared to 31.7 cents per gallon for liquid calcium chloride. We found the salt brine was successful and we will expand on its use. The use of brine is also currently being experimented to pre-treat the streets using salt brine instead of salt. We will evaluate this process and if it is successful, we will implement it during the 1997/98 season.</p>	

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<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Apr-97	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>Recommendation No. 9: Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.</p>		
<b>Status:</b>	<p>Implemented. Last year's contract plowing of residential streets was bid based on the payment criteria of 3 years ago. The bids from this criteria were evaluated against those of the most recent years. Since bid specifications changed over the past few years, an adequate comparison to the last few years contractor prices is not totally feasible. However, in comparing the 93-94 average residential contractor bid price per route for a 3 to 6 inch snowfall with contractor bid prices per route for 94-95, on average there was a \$110 decrease in price per route.</p>	
<p>Recommendation No. 10: Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.</p>		
<b>Status:</b>	<p>Implemented. We sanctioned contractors last year that did not comply with contract specifications be sanctioned according to contract stipulations.</p>	
<p>Recommendation No. 11: Work with representatives from Parks and Recreation and Water Services Department to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness and compliance with stated agreements.</p>		
<b>Status:</b>	<p>In Progress. After meeting with representatives from the Parks and Recreation Department and the Water Services Department we reached an agreement on cost to be reimbursed. Cost assessment bench marks and productions measurements are still being developed.</p>	
<p>Recommendation No. 12: Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.</p>		
<b>Status:</b>	<p>Implemented. The Division Accountant has been assigned this responsibility.</p>	
<p>Recommendation No. 13: Annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.</p>		
<b>Status:</b>	<p>Implemented. The Parks and Recreation Department approved this resolution for FY 94-95 and submitted it to the Public Works Department.</p>	
<p>Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, he should also establish cost benchmarks for storms of varying magnitudes for the purpose of providing a standard of comparison. Analysis should be based on historical expenditures and weather information and should include development of an estimate of fixed cost for storms.</p>		
<b>Status:</b>	<p>In Progress. Target budget and decision package submitted from historical data from past years' storms. Cost benchmarks will continue to be established for varying magnitudes.</p>	

Audit Report Tracking System		
<b>Audit Title:</b>	Snow Removal Program	Page 5 of 5
<b>Report Date:</b>	1-Apr-97	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.</p>		
<b>Status:</b>	In Progress: The budgeted amount for snow removal has been increased from \$255,000 in 1993-94 to \$778,544 in 1994-95 and to \$777,069 in 1995-96 and to \$1,200,000 in 1996-97. The City will continue to strive toward budgeting a larger share of average snow removal cost and rely less on the contingent appropriation.	

<b>Audit Report Tracking System</b>			
<b>1. Audit Title</b> Snow Removal Program	<b>2. This Report Date</b> 1-Nov-97		
<b>3. Department</b> Public Works	<b>4. Last Report Date</b> 1-Apr-97		
<b>5. Department Head</b> George E. Wolf, Jr.	<b>6. Contact Person/Phone</b> Jere Meredith-274-2481		
<b>7. Audit Release Date</b> 7-Feb-94	<b>8. ARTS Number</b> 94-2-3		
<b>9. Status of All Audit Recommendations</b>			
<u>Status</u>	<u>Date</u>	<u>Status</u>	<u>Date</u>
1. Implemented	10/10/94	9. Implemented	10/11/95
2. Implemented	4/1/97	10. Implemented	10/6/95
3. Implemented	4/24/95	11. Implemented	11/1/97
4. Implemented	10/6/95	12. Implemented	10/6/94
5. Implemented	10/6/94	13. Implemented	10/6/94
6. Implemented	10/11/94	14. In Progress	11/1/97
7. Implemented	10/11/94	15. In Progress	11/1/97
8. Implemented	4/1/97		
<b>10. Recommendations Included in this Report</b>			
<p>Recommendation No. 1: Develop and implement procedures that stipulate when and for what snow removal activities overtime is appropriate. Procedures should identify the number of supervisory and support personnel necessary to handle snow emergencies. Procedures should be designed with the goal of minimizing the amount of overtime worked by support personnel and the amount of overtime expended after Phase I and Phase II have been canceled.</p> <p>Status: Implemented: A policy was implemented in October 1994 which describes when and how employees are to be used during snow and ice control conditions.</p> <p>Recommendation No. 2: Continue to utilize associates from other sections and divisions in the Public Works Department to perform snow removal in order to make up for position vacancies and reduce overtime. In addition, when feasible, the division manager should develop procedures and direct division staff to employ simultaneous salting and plowing techniques.</p> <p>Status: Implemented: Planning for the 1997/98 winter includes the use of associates from the Engineering Division, Motor Equipment Division, and the Traffic Operation Section. Associates from Water Services will be utilized for plowing operations only. In addition, associates from Codes Administration and Neighborhood and Community Services are utilized for contract plowing inspection. Routes and conditions continue to be identified where simultaneous plowing and salting should be applied. We now have 32 single axle dump trucks and 9 tandem axle dump trucks that meet the criteria of weight compliance, adequate motor horsepower, and adequate hydraulic pump capacity to perform simultaneous salting and plowing. All new dump trucks are being specified with this capability.</p>			

Audit Report Tracking System		Page 2 of 5
<b>Audit Title:</b>	Snow Removal Program	
<b>Report Date:</b>	1-Nov-97	
<b>10. Recommendations Included in this Report (continued)</b>		
<p>Recommendation No. 3: Determine personnel requirements necessary to operate eight-hour shifts. The analysis should include identifying department employees from other divisions and sections who could participate in program &amp; determine cost reductions associated with change.</p>		
<b>Status:</b>	<p>Implemented. We were able to solicit 1 additional snow equipment employee from within our department. The additional employee along with allowing for 22 employees from Traffic Operations and Motor Equipment shows an additional 72 snow equipment operators and 9 supervisory employees still required to satisfy this recommendation. The estimated cost is still \$1,520,000 to reduce the overtime reduction savings of \$396,000. We feel this is economically unfeasible.</p>	
<p>Recommendation No. 4: Reconsider the policy of releasing private contractors from their commitments before the route has been completed, especially if early release results in additional overtime by Street and Traffic Division associates. When feasible, the division engineer of the Street and Traffic Division should direct that push-back work be conducted on non-overtime shifts.</p>		
<b>Status:</b>	<p>Implemented. We evaluated this practice last winter. When practical, we held the contractors to their contract stipulations and did not release them until their routes were completed. We will continue to assess conditions and weather forecasts and when possible perform shoulder push back on regular time.</p>	
<p>Recommendation No. 5: Conduct cost analysis to identify the amounts that could be saved if salt corrosion of vehicles was reduced. Analysis should include comparing the cost of repairing salt damage with the cost of installing appropriate washing facilities and employing techniques to keep salt drier.</p>		
<b>Status:</b>	<p>Implemented. This analysis has been done and reported in the letter from the superintendent of Motor Equipment, dated January 20, 1994. The analysis reveals that the vehicle corrosion damage, if totally eliminated (which isn't possible) would offset the cost of installing a "standalone" automated wash facility in the third year of service. We included this proposal in our 1995/96 budget submittal.</p>	
<p>Recommendation No. 6: Investigate ways to keep contractor costs down. For example, determine whether contractors would be willing to keep annual price increases within a limit set by the manager if the contractor was able to negotiate a contract period for longer than one year.</p>		
<b>Status:</b>	<p>Implemented. In 1995, the contract plowing bid had a 2 year renewable option with increases based on the increase in the "consumer price index." Rates were up slightly from 1994 and few contractors requested the CPI adjustment for 1995 and 1996.</p>	

Audit Report Tracking System	
Page 3 of 5	
<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	1-Nov-97
<b>10. Recommendations Included in this Report (continued)</b>	
<p>Recommendation No. 7: Solicit bids on all plowing routes, including those traditionally performed by the City. Determine the City's cost of plowing those routes and determine whether to contract the routes out or continue using City crews. If the routes are to be contracted out, change the contract terms to ensure that arterial routes are plowed quickly. Once all routes are bid and bids are analyzed, City forces should be allocated in a manner designed to minimize total costs.</p> <p><b>Status:</b> Experimental project - Street Division, district two was selected to supervise and inspect private contractor's removal of snow on several A and B routes. The district's responsibility was to salt and inspect routes after the contractor's plowing operation.</p> <p>During the last two years the following problems were encountered:</p> <ul style="list-style-type: none"> <li>After notification, several of the contractors could not respond for 2 to 3 hours because their equipment was based outside the Kansas City area.</li> <li>Numerous failures to notify district as requested when they arrived at their appointed location. District drivers were standing-by at the location for an hour or more.</li> <li>Idle City drivers and trucks project a negative image to the public.</li> <li>Numerous contractors determined where they started plowing their appointed routes. The district then had to locate the contractor.</li> <li>A number of times the inspector returned to the district for more salt, upon returning to the route the contractor could not be located.</li> <li>Several contractors had to be repeatedly cautioned to plow curb to curb.</li> </ul> <p><b>Conclusion:</b></p> <p>Due to the aforementioned problems, district two found that by doubling their effort City forces in the downtown area and on streets similar to Truman Road were more efficient on A route snow removal. Street Operations suggests the A routes be plowed by Street Operations with the assistance of Water Services. The B routes will be the responsibility of private contractors.</p> <p>Recommendation No. 8: Identify ways to increase the number of routes plowed by City forces, including both commercial and residential routes. This could be accomplished by reallocating equipment to less vehicle intensive routes and identifying the cost benefit of purchasing enough equipment to plow 10 more routes. Analysis should include cost productivity increases which might result from using larger trucks, more motor graders, and new plowing technology.</p> <p><b>Status:</b> Implemented. The analysis we provided in the October 1995 report still holds true. The cost analysis is far greater than it is currently when you take into consideration the purchase of 20 new pickups with plows and the addition of 40 new associates. The "Driveway Gates" we installed on our motor graders to prevent snow from blocking driveways and intersections proved positive. The addition of new truck beds that also work as spreaders were evaluated last year and found to be successful. We will order more of this type in the future. We continue to install calcium chloride tanks on all new spreaders which allows application at the spinner. This allows better distribution of the liquid calcium onto the salt and is less corrosive to the spreader. In additional, we evaluated the use of salt brine as an alternate to calcium chloride. This is a liquid we produce from our salt supply, it is less corrosive and more cost efficient than calcium chloride. The cost for using salt brine is 2 cents per gallon as</p>	

Audit Report Tracking System	
<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	1-Nov-97
<b>10. Recommendations Included in this Report (continued)</b>	
	<p>compared to 31.7 cents per gallon for liquid calcium chloride. We found the salt brine was successful and will expand on its use. Currently, we are experimenting with the use of salt brine instead of salt in the pretreatment of streets. We will be able to pretreat bridges, certain hills, and experiment in residential areas with brine treatment in district two. We will evaluate the effectiveness of these pretreatments at the end of the snow season. We are also expecting delivery on 7 additional wing plows which will double plowing capacity per unit.</p>
<b>Recommendation No. 9:</b>	Carefully analyze proposed changes in contract specifications before the specifications are adopted to determine whether the proposed changes will result in the desired outcome.
<b>Status:</b>	Implemented. Last year's contract plowing of residential streets was bid based on the payment criteria of 3 years ago. The bids from this criteria were evaluated against those of the most recent years. Since bid specifications changed over the past few years, an adequate comparison to the last few years contractor prices is not totally feasible. However, in comparing the 1993/94 average residential contractor bid price per route for a 3 to 6 inch snowfall with contractor bid prices per route for 1994/95, on average there was a \$110 decrease in price per route.
<b>Recommendation No. 10:</b>	Ensure that contractors who do not comply with contract specifications be sanctioned according to contract stipulations.
<b>Status:</b>	Implemented. We sanctioned contractors last year that did not comply with contract specification on one or more occasions and will continue this practice.
<b>Recommendation No. 11:</b>	Work with representatives from Parks and Recreation Department and Water Services to establish a policy of the expenses to be reimbursed for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.
<b>Status:</b>	Implemented. After meeting with representatives from the Parks and Recreation Department and Water Services, we reached an agreement on cost to be reimbursed. Cost assessments, bench marks and production measurements will continue to be modified as data becomes available. Also, we now have signed agreements for plowing between Street and Traffic, Parks and Recreation, and Water Services. Outlined in these agreements are instructions regarding equipment usage, times, supervision, etc.
<b>Recommendation No. 12:</b>	Assign a member of his staff the responsibility of monitoring billings for snow removal activities from other departments for accuracy, reasonableness, and compliance with stated agreements.
<b>Status:</b>	Implemented. The Division Accountant has been assigned this responsibility.
<b>Recommendation No. 13:</b>	Annually submit to the Public Works Director a service resolution in accordance with the Administrative Code.
<b>Status:</b>	Implemented. The Parks and Recreation Department approved this resolution for 1994/95 and submitted it to the Public Works Department.

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<b>Audit Title:</b>	Snow Removal Program
<b>Report Date:</b>	1-Nov-97
<b>10. Recommendations Included in this Report (continued)</b>	
<p>Recommendation No. 14: Continue to develop annual snow removal budget proposals based on expenditures and weather patterns for an average year. In addition, establish cost benchmarks for storms of varying magnitudes for the purpose of providing a standard of comparison. Analysis should be based on historical expenditures and weather information and development of an estimate of fixed cost for storms.</p> <p>Status: In Progress: The target budget and decision package submitted is based on historical data. We are working with Management Partners to develop benchmarks and will be collecting the necessary data for comparative purposes.</p> <p>Recommendation No. 15: Discontinue funding snow removal from the contingency fund and appropriate funding for snow removal through the normal budget process.</p> <p>tatus: In Progress: The budget amount for snow removal has increased from \$255,000.00 in 1993/94 to \$1,200,000.00 in 1997/98. Considerable progress has been made to adequately fund the program, but the amount in the FY 98 budget is still \$600,000 short of matching the historical expenditures.</p>	

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**Appendix C**

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**City Manager's Response**





## Office of the City Manager

**DATE:** July 19, 1999  
**TO:** Mark Funkhouser, City Auditor  
**FROM:** Robert L. Collins, City Manager  
**SUBJECT:** Snow Removal Follow-Up Audit Report

This memorandum comments on your recommendation No. 2 in the "Snow Removal Follow-Up Audit Report" dated July 1999.

Your recommendation stated:

"The city manager should develop and implement an equipment replacement funding program to provide for the systematic funding and replacement of city vehicles and equipment."

Parks and Recreation, Public Works and Water Services Departments are each involved in the city's snow removal program. Water Services Department as an enterprise funding department does have a dedicated equipment replacement fund. Although the budget for the general fund departments does not provide for a dedicated equipment replacement fund, we have made considerable progress in increasing funding in the Parks and Recreation and Public Works Departments for equipment replacement in recent years.

Equipment replacement funding has been increasing for Public Works each year to its current level of \$2.85 million. Public Works feels that if this annual funding is maintained at 3.0 million, they will be able to replace vehicles in a planned replacement program that will minimize overall costs. After this year the Streets and Traffic truck fleet will include only trucks that are 1993 models or newer. They have also added salt brine applicators, wing plows on tandem trucks, self standing spreader racks, a fourth salt dome, portable conveyor and flow and dump beds. Public Works believes that with continuing budgeting for snow removal and a \$3.0 million equipment replacement budget, they will be able to maintain a proper equipment replacement program and continue to make technological improvements in the snow fleet.

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OFFICE

Mark Funkhouser  
July 19, 1999  
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Budgeted funds for Parks and Recreation has been increasing. This past year their budget was increased by \$250,000 for equipment replacement. This office understands the importance of equipment replacement programs and is committed to continuing to increase the level of funding for this purpose. Although it is not in a dedicated replacement fund, I will make certain that this allocation is not reduced in future years as a budget balancing measure.



Robert L. Collins

RLC:emm  
cc: Ed Wolf, Public Works

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## **Appendix D**

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### **Director of Public Works' Response**





## Interdepartmental Communication

**DATE:** July 9, 1999

**TO:** Mark Funkhouser, City Auditor

**FROM:** George E. Wolf, Jr., P.E., ACM/Director of Public Works

By: 

**SUBJECT:** Draft of Snow Removal

In response to the recommendations in the follow-up audit of snow removal services, we submit the following:

1. **Recommendation.** The director of public works should further refine and report key performance measures comparing the snow and ice control performance of the division, other departments, and contractors.

**Agree.** We will change the performance measure from lane miles of responsibility to actual lane miles plowed and qualitative results will be added.

2. **Recommendation.** The director of public works should ensure that agreement and contract provisions are enforced.

**Agree.** Enforcement provisions of contracts and agreements will be reviewed with staff and standard procedures established.

GEW:JEM:lcw

cc: Street and Traffic  
Director's GF, RF

