

March 13, 2008

**Internal Audit Report 2008-2  
Maximo Work Order System  
Facility Maintenance  
Maintenance and Operations**

**Introduction.** According to the Municipality’s website, “The Facility Maintenance Section provides the maintenance of over 164 municipal buildings and over 211 parks. Our maintenance responsibility includes all facets of building maintenance including HVAC, carpentry, electrical, plumbing, mechanical, welding, painting, graffiti removal and roofing service. In-house personnel respond to the daily operational needs of the buildings and perform preventive maintenance on all major building systems. Some major repairs and facility upgrade work may be accomplished through service contracts with outside firms.”

Requests for routine maintenance come either via e-mail, fax, telephone, or in-person. Routine work orders are created daily in a computerized maintenance system called Maximo. Generally, preventive maintenance work orders are created based on the schedule previously set up in Maximo.

**Objective and Scope.** The objective of this audit was to determine whether work was scheduled and tracked through Maximo and whether labor and materials were properly recorded in Maximo. Our audit included a sample of 185 work orders. We also reviewed 26 work orders that had no labor hours nor material charges.

The audit was conducted in accordance with generally accepted government auditing standards, except for the requirement of an external quality control review, and accordingly, included tests of accounting records and such other auditing procedures as we considered necessary in the circumstances. The audit was performed during the period of September through October 2007.

**Overall Evaluation.** The Facility Maintenance Section has not used Maximo effectively to schedule and track work orders, labor charges, and material charges. Specifically, there was not a comprehensive preventive maintenance plan for facilities, labor hours posted to work orders in the Maximo system were not always accurate or supported by approved employee time cards, and material charges posted to work orders in the Maximo system were not always accurate or supported by approved invoices. Finally, the Maximo system was not used effectively to schedule required facility maintenance and close out completed work orders.

**Management Overall Comments.** Management stated,

- “• Maximo has out-lived its usefulness to the Section, in part due to antiquated user interface, limited ability to produce needed reports, inability to adequately track contracted work and the inability to establish, track and update deferred maintenance lists so maintenance and planning for capital improvements needs can be developed and completed for our facilities. In fact, the Section has been relying on the People Soft system to accurately track time and material costs associated with the maintenance function.
  
- “• In early 2006, the Section initiated a search for a new system that would improve the work order system by coordinating and integrating that system with a capital management planning system in order to fully address deferred maintenance and capital funding needs. MicroMain XM Enterprise Computerized Maintenance Management System and MicroMain CM Enterprise Capital Planning and Asset Management System software were selected through an RFP process to manage the Section’s work and planning functions. A notice to proceed for the installation of the management software was given effective January 24, 2008 and completion is expected to be reached in April, 2008.
  
- “• After the new MicroMain system is on line, training is complete and fully functional we think it would be appropriate for Internal Audit to review its operation and make suggestions

to staff during the implementation. We would welcome recommendations during this process and could evaluate and discuss the possible benefits.”

## **FINDINGS AND RECOMMENDATIONS**

### **1. Inadequate Preventive Maintenance Plan.**

- a. Finding.** There was not a comprehensive preventive maintenance plan. Instead, management relied on Maximo’s limited capabilities to schedule some preventive maintenance tasks. However, even when these tasks were scheduled, we found that many of them were later closed and recorded in Maximo as completed when no work was done. Finally, when preventive maintenance tasks were performed, it was unclear how management decided what preventive maintenance would or would not be completed. For example, one Municipal building had the following preventive maintenance scheduled: annual plumbing system inspection, annual roofing system inspection, and a monthly mechanical system operational inspection. However, another similar building did not have the plumbing system inspection or the mechanical system operational inspection scheduled.
- b. Recommendation.** A comprehensive preventive maintenance plan should be developed for all Municipal facilities. The scheduled preventative maintenance should be completed to minimize future problems.
- c. Management Comments.** Management stated, “The Section concurs with the finding. During implementation of MicroMain XM an in depth inventory of each facility and all operating systems will be evaluated and documented. After careful analysis of the data, a comprehensive preventive maintenance plan will be implemented based on the realistic needs of the department and available manpower. Under the new work order system, procedures will be implemented to ensure that all

labor times and materials are recorded accurately for facility maintenance cost purposes.”

- d. **Evaluation of Management Comments.** Management comments were responsive to the audit finding and recommendation.

2. **Labor Hours Posted to Work Orders Not Accurate.**

- a. **Finding.** Labor hours posted to work orders in the Maximo system were not always accurate or supported by approved employee time cards. Our review of 143 work orders with labor hours revealed the following:

- Hours entered on 12 work orders were not supported by signed time cards.
- Hours on employee time cards were incorrectly entered on 13 work orders.
- Hours on employee time cards were entered on the wrong work order in 14 instances.

- b. **Recommendation.** Hours posted to work orders in the Maximo system should be supported by signed employee time cards and accurately input to the appropriate work order.

- c. **Management Comments.** Management stated, “The Section concurs with the finding. MicoMain XM, procedures will be implemented to ensure that all labor times are recorded accurately for facility maintenance cost purposes. Supervision will brief all personnel and conduct random audits to ensure that time cards are accurately documented and corresponding information is accurately placed into the work order tracking system.”

- d. **Evaluation of Management Comments.** Management comments were responsive to the audit finding and recommendation.

3. **Material Charges Posted to Work Orders Not Accurate.**

- a. **Finding.** Material charges posted to work orders in the Maximo system were not always accurate or supported by approved invoices. Our review of 58 work orders with material charges revealed the following:
- Invoices for materials charged to 10 work orders were not approved by a supervisor.
  - Material charges posted to six work orders were not accurate based on supporting invoices, including four invoices that were posted twice.
- b. **Recommendation.** Material charges posted to work orders should be supported by approved invoices and input accurately.
- c. **Management Comments.** Management stated, “The Section concurs with the finding. Training and new procedures will be implemented as part of the integration of Micro Main XM to ensure that all material charges are recorded accurately to each work order for facility maintenance cost purposes. Management will provide follow up training for supervisors and conduct random audits to ensure materials are approved and properly documented in the system.”
- d. **Evaluation of Management Comments.** Management comments were responsive to the audit finding and recommendation.

**4. Maximo System Not Used Effectively.**

**a. Finding.** The Maximo system was not used to manage facility maintenance and close out completed work orders. Specifically, we found the following:

- 1) Estimated Hours and Costs Not Used - The estimated labor hours and cost functions in Maximo were not utilized for creating new work orders. According to Section management, assigning estimated hours and costs was not a necessary management tool.
- 2) Work Orders Not Always Assigned to Employees - At the time of our audit, there were 262 pending work orders that were unassigned in Maximo. The work orders consisted of 167 preventive maintenance work orders and 95 routine maintenance work orders. According to Section management, employee names are entered into Maximo and attached to a work order after the work has been completed.
- 3) Work Order Closures Not Approved by Supervisor - According to Section employees, work order closures were not approved by a supervisor.
- 4) Work Orders Not Always Closed Timely - Our review of 30 closed work orders revealed that six were closed from 22 to 170 days after the latest day that labor or materials were charged to the work order. In addition, 242 work orders were closed during our audit on September 11 and 12, 2007. Some of these work orders were opened over a year ago and 171 were not submitted by employees for closure, but were backdated to an approximate closing date.
- 5) Work Order Closures Not Documented - Work orders with no material and labor charges were closed without adequate supporting documentation. We

found that 307 of 2,834 work orders closed between January 1 and September 25, 2007, did not show any work performed and had no labor hours and material charges.

- 6) Labor and Materials Charged to Closed Work Orders - Our review of 185 closed work orders revealed that 29 work orders had either labor, materials or both charged to the work orders after they were closed in Maximo.

**b. Recommendation.** To effectively use the Maximo system, we recommend the following:

- 1) Estimated labor hours and cost functions in Maximo should be used to manage employee productivity.
- 2) Work orders should be assigned by supervisory personnel to specific employees.
- 3) Supervisors should approve completed work orders prior to closure to ensure that the work was completed.
- 4) Work orders should be closed in Maximo after all work has been completed and a supervisor has reviewed the work.
- 5) Labor and materials charges should not be posted to work orders after they are closed.

**c. Management Comments.** Management stated, “The Section concurs with the finding. The current Maximo system is obsolete and is currently in the process of being replaced. The Section utilized this system internally in a minimal capacity

based on the desired needs of the Division. The Section intends to utilize MicroMain XM to the maximum benefit without creating undue additional workload for the existing staff. The Section also intends to evaluate the abilities of the new work order system, and will implement procedures it finds appropriate that add value to the operation of the section. Management will implement procedures that ensure timely compliance with supervisor approval and work order closeout.”

- d. **Evaluation of Management Comments.** Management comments were responsive to the audit finding and recommendation.

**Discussion With Responsible Officials.** The results of this audit were discussed with appropriate Municipal officials on January 10, 2008.

Audit Staff:  
Marina Sapelnik  
Scott Lee