# CITY COUNCIL STUDY SESSION

**TO:** Mayor and City Council

**FROM:** Mari E. Macomber, City Manager

**SESSION DATE:** March 21, 2011

**TIME:** 4:30 pm

**PLACE:** Second Floor Conference Room

We will meet in the Council Chambers of City Hall starting at 4:30 pm, followed by the City Council Meeting at 6:00 pm.

## AGENDA:

- WATER TREATMENT PLANT UPDATE
- TMDL REPORT FOR BEAR CREEK
- DISCUSS SNOW STORM POLICIES
- DISCUSS PERFORMANCE CONTRACTING
- REVIEW COUNCIL NEWSLETTER

**WATER TREATMENT PLANT UPDATE**

The City has just completed a multi-phase improvement program at the water treatment plant. On Monday, John Calise and Adam Dorrell with Benton and Associates will cover the following topics as they relate to the water treatment system: Regional Significance; Need for Planning; Water Infrastructure Overview; Project Cost Summary; and Construction Photos.

Since we have completed a multi-phase water treatment plant improvement process, we wanted to take this opportunity to summarize this for the City Council.

As a reminder, the funding for these improvements has come from user charges for water service, and then more recently made possible through voter approval and participation in the State of Missouri Revolving Loan Fund program (SRF). Participation in the drinking water SRF program first occurred in the fall of 2004 to finance an extension of the City's water main to the Airport, which occurred in conjunction with the Adair Public Water Supply district extending the line to supply water to the City of La Plata. Additional SRF funding was received in the fall of 2005 to complete upgrades of the water treatment facility and water main improvements. The SRF program has assisted us in completing the more recent water treatment plant improvements.

In April 2006, voters approved the City to acquire additional bonds of up to $3.5 million for future water needs. In April 2007, $3.5 million was issued to fund needed water plant improvements (Phase 1 and 2) and to replace the downtown water lines.

Some of the work done prior to this includes: 16" Main/ Water Treatment Plant to the Brewington Elevated Tank (1999); Forest Lake Raw Water Pump Station Upgrades and Transmission Main (2002); Water Treatment Plant Filter Upgrades and Expansion to 6 Million Gallon Day production (2003); Water Treatment Plant Ammonization System Improvement (2003); and Water Distribution Line Extensions – annexation areas (2004). Benton and Associates should cover most of these projects in their presentation.

As a reminder, the City's water system provides water service to more than 7,000 customers directly, inside and outside the city limits, and to the Adair County Public Water Supply District customers. With the extension of the transmission line to the airport, the City of LaPlata now receives water from the City through the Adair County Public Water Supply District.

The water treatment facility is located on city property at the northwesterly edge of the City. The water treatment facility was designed to treat surface water with facilities for feeding chemical for treatment and distribution of finished water. The water supplying the plant comes from two water supply reservoirs (Forest Lake and Hazel Creek Lake). Forest Lake was constructed in 1952 and Hazel Creek in 1982.

The raw water from each of these reservoirs is pumped through transmission lines to a holding pond located at the water treatment plant.

Once the water is treated it is transferred to the four elevated water storage tanks and the ground storage tank. These tanks account for about 4 million gallons of finished water storage. The ground storage tank is located at the water treatment plant and is scheduled for painting under the contract with Sparks. The other tanks are located on the north, south, east and west of the City (Brewington, Shepherd, School, and Downtown). The system also consists of over 100 miles of water mains that bring the water to the private service lines feeding homes and businesses.

The City's Enterprise Fund, which includes water, sewer and the recent addition of storm water, makes up 39% of the 2011 budget.

**Recommended Action:**
This is an opportunity for the City Council to receive a summary report of all of the work that has been completed. The Council is encouraged to ask questions of Benton and Associates staff.

**TMDL REPORT BEAR CREEK**
The Federal Clean Water Act regulates interstate waters. Provisions of this Act require each state to identify those bodies of water within each state that are both impaired and that do not have adequate water pollution controls in place. For the state of Missouri, the Missouri Department of Natural Resources is responsible for insuring that measures

are taken to protect these waters. The section of the Clean Water Act that includes this responsibility is Section 303(d).

Brief discussions regarding the 303(d) list have been mentioned over the last few years when touring the wastewater treatment plant, and discussing activities of the Watershed.

What does this mean for the City of Kirksville? The State of Missouri has an established list of rivers, streams and lakes that have been identified as impaired for one reason or another. Several local waters are included on the State's 303(d) impaired waters list. There are several reasons that waters are impaired, for these local bodies, they have been identified as impaired due to a negative impact on aquatic life. Other reasons that a water source could be placed on the list could be due to a negative impact on Whole Body Contact Recreation (swimming), Public Drinking Water Supply, Livestock and Wildlife Watering, Secondary Contact Recreation (Fishing and Boating), Irrigation, and Industrial Water.

Bear Creek was added to the list in 2002, removed later then added again in 2008. Hazel Creek was placed on the list in 2008 due mercury levels. This past year, Hazel Creek and Forest Lake were placed on the list for Chlorophyll, while Forest Lake has also been identified for Nitrogen and Phosphorus levels. Again the impact is on aquatic life and does not affect the drinking water or recreational uses of the city's water sources.

During the presentation to the City Council to introduce HDR, the engineering firm hired to complete the City's wastewater treatment plant facility plan, it was noted that a meeting would be held with DNR officials to discuss the facility plan and permitting process. Since the wastewater plant's effluent is discharged in to Bear Creek, our new operating permit will have requirements placed upon it to address Bear Creek's impairment.

**Recommended Action:**
We want to take the opportunity on Monday to discuss this in further detail with the Council. There are no actions or decisions that will be required of the Council.

**DISCUSS SNOW STORM POLICIES**
Snowfall accounts for a small portion of the total precipitation an area receives. However, not only have we seen increased rainfalls, but in the past two years we have seen increased annual levels of snowfall (2009-10 snowfall 44 inches / 2010-11 snowfall 40 inches). The average snowfall for Kirksville is about 22 inches.

Staff met with the Council last year around the same time to discuss the things that needed to be addressed to improve our operations. We identified several things that we wanted to work on. (1) Complete a written policy for snow removal, and educate staff on its contents; **(DONE)** (2) Add anti-icing equipment (brine system) to snow removal

fleet;**(EQUIPMENT ADDED)** (3) Meet with downtown stakeholders and revise snow removal and parking policies to better serve and more efficiently clear this area; **(NEED TO DO)** (4).Use the media, website, area scene, and other venues to educate the public on snow removal procedures, and how they can help make operations more efficient, BEFORE the first significant snowfall; **(EFFORTS MADE)** and (5) Review the Snow Emergency ordinance and listed streets. Coordinate list with Hospital, Emergency Service Providers, and School District. **(CONTACT MADE, STREETS NEED TO BE REVIEWED)**

Included is a report from Public Works Director John Buckwalter regarding a summary report regarding snow operations, our snow removal policy, and an after storm report from the February 3 snow storm. The early notification of the impending storm, aided us tremendously, the activation of the emergency operation center (EOC) was critical, and decisions to organize tasks early on was key. We made the decision to declare a snow emergency. This allowed for early notification and removal of vehicles from key roadways.

There was great success and disruptions to the community were minimized, but there were still improvements identified. We will need to review the list of streets in our emergency snow route plan. Non emergency routes were difficult to plow due to parked cars along the roadways. Some additional equipment may be needed. Operational procedures for some of our snow removal equipment will need to be updated. Provisions need to be in place for emergency services to obtain needed resources, such as fuel when normal source is not available. A comprehensive list of all City equipment needs to be available and access available for use during emergency operations. We found that we were not only fighting snow but private contractors and others who would move snow from private locations to public areas. Efforts are needed to expand communications to the private sector, especially those businesses that have multiple shifts, as rescue efforts were underway throughout the storm to assist motorists trying to get to work. Another issue that needs to be addressed is the use of right of way for decorative plantings that may be damaged during snow removal.

Recommended Action:
The City has limited resources, and must balance these resources with the various services we are expected to provide. We want to have a snow and ice control program that provides service to the citizens without creating unrealistic expectations.

The 2010-2011 snow removal season is drawing to a close as we approach the month of April. We are still holding our breath, hoping the Farmer's Almanac is wrong.

**DISCUSS PERFORMANCE CONTRACTING**

In 1997, the state legislature enacted legislation that allows governmental units including local governments within the state of Missouri to pursue energy savings through performance contracting. Performance contracts provide the governmental entity a guaranteed energy cost savings contract over a specified period of time. If the

savings are not generated as outlined, then the performance contractor is liable to the governmental entity to make up the difference.

Performance contracting is a way to improve efficiency in operations giving the government additional funds to use for other operational costs.

City staff has been discussing performance contracting with three separate vendors over the course of this past year. Face to face interviews were held in January to learn more about performance contracting and to determine if this is something that should be considered further. After evaluating the information provided by each vendor, staff determined that there was some merit in taking the next step.

That step was to bring the concept forward to the City Council to discuss. City staff is interested in requesting proposals from qualified performance contractors on several improvement projects including lighting improvements, HVACs and roof improvements, and an alternative project that would provide automated meter reading equipment for the utility fund.

Included with this cover memorandum is a report from Brad Selby that includes additional information regarding the projects and potential savings. The authorizing state statute is also included.

**Recommended Action:**
Staff wishes to discuss this concept with the Council and determine if there is enough interest to explore this through a request for proposal process that would still require Council approval before any work could begin.

**NEWSLETTER**

**Attachments**

- **Staff Report – TMDL and 303(d)**
- **Appendix F – Supplemental Information TMDL**
- **Staff Report – Snow Storm**
- **Snow and Ice Control Program**
- **After Action Report – February 3 Snow Storm**
- **Staff Report – Performance Contracting**
- **Performance Contracting – Vendor Comparison**
- **State Statute 8.231**
- **Snow Reports**

**KIRKSVILLE CITY COUNCIL STUDY SESSION ATTACHMENT**

**SUBJECT**: TMDL and 303(d) Listed Waters of Interest to Kirksville

**STUDY SESSION MEETING DATE**: March 21, 2011

**CITY DEPARTMENT**: Public Works

**PREPARED BY**: John R. Buckwalter, PE, Public Works Director

Section 303 (d) of the Federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. This list is developed by the Water Pollution Control Branch of the Department of Natural Resources for the Missouri Clean Water Commission. This list is referred to as the "303 (d) List", or the List of Missouri Impaired Waters. This list is updated every two years. On November 3, 2010 the Missouri Clean Water Commission approved the list of impaired Missouri Waters, or the 2010 Missouri 303 (d) List. The list is ten pages long and will be provided attached. The 2010 303 (d) list includes some 55 lakes which were not included in the 2008 list, but were added as the result of revision to the listing methodology.

The following waterbodies of interest to Council are listed on the 2010 303 (d) List, and are detailed further in this report.

| Year | Waterbody Name | Size | Pollutant | Source | County |
|---|---|---|---|---|---|
| 2002 | Bear Creek | 2.0 mi | Unknown | Unknown | Adair |
| 1998 | Chariton River | 111.0 mi | Bacteria | Rural NPS | Putnam/Chariton |
| 2010 | Forest Lake | 580 ac | Chlorophyll | Rural NPS | Adair |
| 2010 | Forest Lake | 580 ac | Nitrogen | Rural NPS | Adair |
| 2010 | Forest Lake | 580 ac | Phosphorus | Rural NPS | Adair |
| 2008 | Hazel Creek Lake | 453 ac | Mercury (T) | Atmospheric | Adair |
| 2010 | Hazel Creek Lake | 453 ac | Chlorophyll | Rural NPS | Adair |
| 2002 | Mark Twain Lake | 18,132 ac | Mercury (T) | Atmospheric | Monroe/Ralls |
| 2010 | Mark Twain Lake | 18,132 ac | Nitrogen | Rural NPS | Monroe/Ralls |

The only beneficial use of the lakes listed which is impaired is "protection of aquatic life". The beneficial uses of Public Drinking Water Supply, Whole Body Contact Recreation, and all other beneficial uses are NOT impaired.

The Chariton River and Mark Twain Lake are listed in this report because they are downstream of the City of Kirksville. Bear Creek ultimately flows to Mark Twain Lake, and the western part of the City drains to the Chariton River watershed, as do the spillways of both Forest Lake and Hazel Creek Lake. Development of pollutant load limits on these two waterbodies could have a direct impact on the City's Municipal Separate Storm Sewer System (MS4) discharge permit.

Hazel Creek Lake was first added to the proposed 303 (d) list in 2008 when the level of Mercury found in samples of largemouth bass was 0.393 mg/kg, which is above the federal criteria of 0.30 mg/kg. The source of the Mercury is listed as atmospheric deposition. In 2010 it was determined that the total chlorophyll criterion is exceeded in Hazel Creek Lake, and the waterbody was listed as impaired for the beneficial use of "General criteria pertaining to the protection of aquatic life". The source is listed as rural non-point sources. The listing has no

impact on the City's use of the lake as a water source nor on its use for recreation. A general advisory for Mercury in fish tissue has been issued by the Missouri Department of Health and Senior Services. The current schedule for issuing a Total Maximum Daily Load (TMDL) for pollutants for Hazel Creek Lake is 2015.

Forest Lake was added to the 2010 impaired waters because the total phosphorus, total nitrogen and total chlorophyll criteria are all exceeded. The source of the pollution was listed as rural non-point sources. Like Hazel Creek, the only impaired use is "protection of aquatic life". Use of the lake for water supply, recreation including whole body contact (swimming) and other beneficial users is NOT impacted or impaired. Forest Lake is not included on the current schedule for development of a TMDL. Watershed management is the practical solution to reducing nutrient loading to Forest Lake.

Bear Creek was first listed on the Missouri 303 (d) list in 2002. It was not included in the 2006 Missouri proposed list, but in 2008 Missouri DNR was directed by the EPA to include it again. The City's wastewater treatment plant discharges to a tributary of Bear Creek, and is in fact the main source of water during much of the year for the upper reaches of Bear Creek. The 303 (d) list shows the pollutant as "unknown" as well as the source of pollution is "unknown". The original listing was based on a "reduced number of riffle fish species in Bear Creek downstream of the Kirksville Wastewater Treatment Plant" when compared to a reference reach of the North Fork of the Salt River. A TMDL has been developed for Bear Creek, and was issued by the EPA on December 23, 2010. This TMDL and the limits it establishes for the City's wastewater treatment plant discharge will have a major impact on the plant's permit and the required improvements to the plant to meet the proposed limits. The TMDL is 111 pages long. It can be found on the City's "Q" drive in the Public Works directory, or on the EPA website.

The key function of a TMDL is to assign waste load (pollutant load) to the identified sources. The TMDL for Bear Creek will require drastic load reductions for the Kirksville Wastewater Treatment Plant.: Appendix F (attached) to the TMDL outlines a supplemental implementation plan and provides some guidance for the way ahead.

The city has retained HDR Engineer's Inc. to assist in the development of a Facility Plan for the City's wastewater treatment plant and permitting activities. Staff and HDR met with representative of the Missouri DNR on March 10, 2011 in Jefferson City to discuss the development of the facility plan, the schedule for issuance of a new permit for the wastewater treatment plant, and the impact of the TMDL on that permit and subsequent permits. The greatest concern is the nutrient limitations outlined in the TMDL. The limits on Nitrogen and Phosphorus implied by the TMDL are beyond most current technologies. DNR is currently developing state wide nutrient criteria. It is unlikely that they will implement the criteria outlined by the TMDL until nutrient criteria are adopted by the State. Additional discussions with DNR will be schedule as the Facility Plan is developed, and permit criteria are resolved. The current goal is to complete the facility plan by March, 2012. The City's WWTP operating permit expired in February 2011. We are allowed to continue operations under the limits established by that permit until a new permit is issued by DNR. We can expect that permit no later than June, 2012.

In summary, the 2010 list of impaired waters includes both water supply lakes of the City, and the stream to which our wastewater plant discharges. The impairments of the lakes have no impact on beneficial use other than the general protection of aquatic life. There is no reason for concern by the citizens of Kirksville and Adair County. The TMDL which has been issued for Bear Creek will have an impact on the future permit limits of the Wastewater Treatment Plant,

and possibly of our MS4 Stormwater Permit. Staff is working with our consultant and DNR to develop a facility plan for the plant identifying alternatives which will meet DNR established limits.

Attachments:

Appendix F, Bear Creek TMDL (pdf)

# Appendix F – Supplemental Implementation Plan

This implementation plan is not a requirement of the Federal CWA. However, the contractor included it as part of the TMDL preparation. EPA recognizes that technical guidance and support are critical to determining the feasibility of and achieving the goals outlined in this TMDL. Therefore, this informational plan is included to be used by local professionals, watershed managers and citizens for decision-making support and planning purposes. It should not be considered to be a part of the established Bear Creek TMDL.

**Point Sources**

The TMDL will be implemented partially through permit action. Effluent limits and monitoring requirements for the Kirksville WWTP will be reevaluated to reflect the water quality targets set by the TMDL as the operating permit approaches renewal. This may result in the implementation of new or revised effluent limits and instream monitoring for $CBOD_5$, TN, TP and TSS using the WLAs developed for this TMDL. In addition, upon approval of this TMDL, the city of Kirksville's MS4 permit may be reopened and modified to include assessment monitoring and pollution control requirements sufficient to characterize and reduce impacts from their storm water discharges.

Operating permits in Missouri have, in the past, authorized discharges of bypassed wastewater at some facilities during peak flow conditions. This is true of the permit for the Kirksville WWTP. These discharges were required to meet effluent limitations, but these limitations were not as stringent as those for the main facility discharge. Changes in MDNR regulations have removed this authorization and, upon next renewal, the Kirksville WWTP permit will be issued without bypass discharges being authorized. Discharges resulting from emergency diversion shall be considered an unauthorized bypass pursuant to 40 CFR 122.41(m) and shall be reported, pursuant to 40 CFR 122.41(m).

If post-TMDL monitoring indicates that point source reductions are not achieving the desired improvements in water quality, MDNR will reevaluate the TMDL for further appropriate actions. These actions may include additional permit conditions on the Kirksville WWTP and the city's MS4 permit, revised permit conditions on other permitted facilities and further control of nonpoint sources through a nonpoint source management plan. If, at any point in this process, water quality and biological sampling determines that designated beneficial uses are being attained, either the city or MDNR may seek to have Bear Creek removed from the 303(d) List of impaired waters.

**Nonpoint Sources**

Nonpoint sources of sediment and nutrients are not regulated in Missouri. While cropland accounts for 2,534 acres, or approximately 15 percent of the watershed, grassland accounts for approximately 9,794 acres, or 56 percent of the land area in the watershed. In addition, there are an estimated 2,115 cattle in the watershed. Agricultural runoff from cropland

and grazing land is a potential component of nonpoint source contributions of nutrients and sediment to the impaired segment, and these should be reduced to meet the TMDL targets.

To reduce the loading and effect of nutrients and sediment on Bear Creek, efforts should be made to encourage agricultural producers in the watershed to adopt best management practices (BMPs). The concept of BMPs is one of a voluntary and site specific approach to water quality management. In the Bear Creek watershed, agricultural BMPs should focus on erosion control measures such as the expansion or enhancement of riparian zones, off-stream watering of livestock and rotational grazing practices. In addition, efforts should be made to encourage agricultural producers in the watershed to adopt sound nutrient management practices, including the proper management and storage of manure.

In an effort to most effectively implement voluntary BMPs, MDNR may work with the Natural Resources Conservation Service, local university extension offices and the local Soil and Water Conservation District to encourage area land owners to implement these practices.

**KIRKSVILLE CITY COUNCIL STUDY SESSION ATTACHMENT**

**SUBJECT**: Snow Storm Policy- 2011 Update

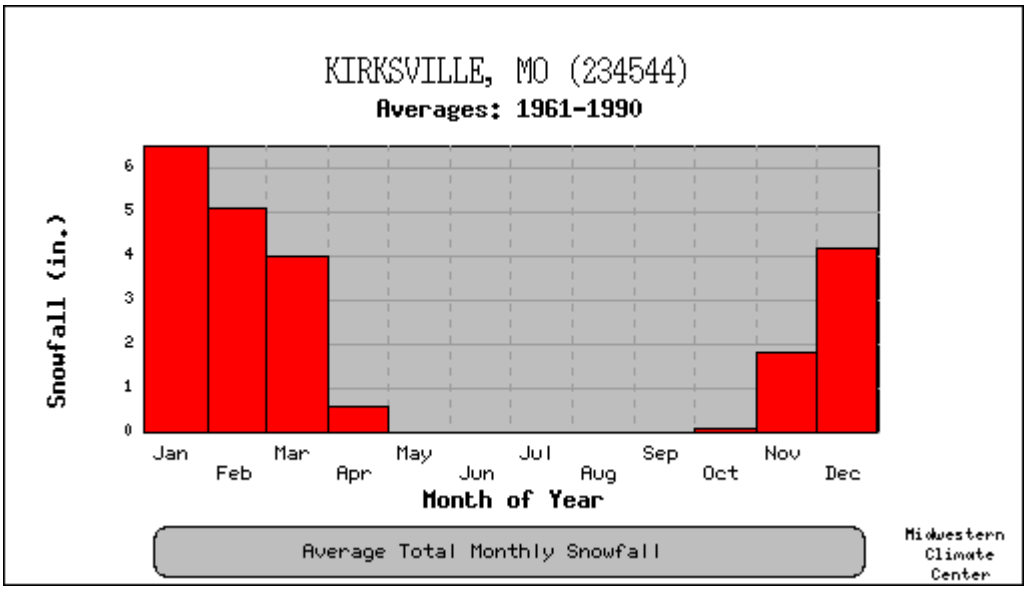
**STUDY SESSION MEETING DATE**: March 21, 2011

**CITY DEPARTMENT**: Public Works

**PREPARED BY**: John R. Buckwalter

Staff and Council reviewed the City's snow removal policy and lessons learned from the 2009-2010 winter on March 1, 2010. This report updates that review, and provides added insight from the 2010-2011 season and the "Blizzard of 2011". This report summarizes the 2010-2011 snow removal effort, outlines lessons learned, and recommends additional changes to policy for Council discussion.

The snow removal season is normally considered November thru March. Historical averages by month are illustrated below, and total just less than 22 inches per year.




In 2009-2010 we received over 44 inches of snow. In 2010-2011 we have received 40 inches of snow; each of the past two years has seen almost twice the annual average. The 2010-2011 season was unique because over one-third of the entire season's snow fell in a single storm.

## 2010-2011 Winter Report

| Month | Date Start | End | Snow Inches | Ice Inches | Manpower Regular | Manpower OT | Equipment Hours | Salt Tons | Brine (Gal) | Snow Plow/Miles | Snow Loads |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **December** | 12/12/2010 | 12/13/2010 | 4 | | | 105.00 | 94 | 3 | 6,000 | 1,348.00 | 38 |
| | 12/16/2010 | 12/16/2010 | | 0.1 | 88.00 | 20.00 | 70 | 13.2 | 9,900 | 619.70 | |
| | 12/24/2010 | 12/25/2010 | 3 | | | 136.00 | 127 | 34.5 | 20,000 | 1,202.20 | |
| | | **Totals** | **7** | **0.1** | **88.00** | **261.00** | **291** | **50.7** | **35,900** | **3,169.90** | **38** |
| **January** | 1/7/2011 | 1/7/2011 | 0.5 | | 54.00 | | 35 | 6.6 | 3,500 | 325.00 | |
| | 1/10/2011 | 1/12/2011 | 4 | | 364.00 | 76.00 | 405 | 82.3 | 6,200 | 2,501.00 | 173 |
| | 1/19/2011 | 1/21/2011 | 4.5 | | 250.00 | 38.00 | 269 | 57 | | 1,634.70 | 64 |
| | 1/23/2011 | 1/24/2011 | 3 | | 111.25 | 97.50 | 191 | 47 | | 1,200.00 | 69 |
| | 1/31/2011 | 1/31/2011 | 1 | | 120.00 | 24.00 | 144 | 36.3 | | 333.00 | |
| | | **Totals** | **13** | **0** | **899.25** | **235.50** | **1,044** | **229.2** | **9,700** | **5,993.70** | **306** |
| **February** | 2/1/2011 | 2/7/2011 | 14 | | 808.00 | 553.00 | 1,340 | 17.6 | | 2,060.00 | 1,354 |
| | 2/24/2011 | 2/25/2011 | 6 | | 168.00 | 111.50 | 213 | 60 | | 1,252.00 | 124 |
| | 2/27/2011 | 2/27/2011 | | 0.05 | | 11.00 | 10 | | 2,200 | 120.00 | |
| | | **Totals** | **20** | **0.05** | **976.00** | **675.50** | **1,563** | **77.6** | **2,200** | | **1,478** |
| **March** | | | | | | | | | | | |
| | | **Totals** | **0** | **0** | **0.00** | **0.00** | **0** | **0** | **0** | | **0** |
| | | **Winter Totals** | **40** | **0.15** | **1,963.25** | **1,172.00** | **2,898** | **357.5** | **47,800** | **9,163.60** | **1,822** |

The winter snow removal report, with costs, is attached. Costs include $70,055 for labor, $33,395 for materials, and $136,985 for equipment. Equipment costs are calculated using FEMA rates.

**2010 Recommendations and Actions:**

During the 2010 review of snow removal polices the following recommendations were made, and the 2010-2011 actions taken are noted:

1. *Complete a written policy for snow removal, and educate staff on its contents.* Actions: A revised snow removal policy was completed in March 2010.

Key elements of the revised policy are:

City is divided into six areas.
Crews will operate on 7 to 7, 12-hour shifts when required.
Streets are divided into priority one and priority two groups.

Crews will apply salt brine, salt, sand, or a combination as required up to the point where snow accumulation has reached 2 inches.

Snow plowing will begin at 2 inch accumulation.
Only priority one streets will be cleaned to bare pavement.
Windrows are not removed.

City will not accept responsibility for damage to roadside objects located within the City's right of way.

City crews will not haul snow from private parking lots in the downtown.

Mailboxes will be repaired or replaced only when actually struck by snowplows.

2. *Add anti-icing equipment (brine system) to snow removal fleet.* Action: The City purchased two 1600 gallon brine tanks with spray controllers in 2010, when snow removal trucks were replaced. City crews fabricated a brine making apparatus from an outdated salt spreader box, and purchased two used 5000 gallon brine storage tanks from MoDOT. The entire brine setup was ready to go for the first storms in December.

3. *Meet with downtown stakeholders and revise snow removal and parking policies to better serve and more efficiently clear this area.* Action: The Director of Public Works and Chief of Police are tasked to develop a comprehensive recommendation for downtown parking, including snow emergencies, street sweeping schedule, major event parking, and distribution of accessible parking. This task has not been completed, but is now a priority effort, and should be available for council review by June 1.

4. *Use the media, website, area scene, and other venues to educate the public on snow removal procedures, and how they can help make operations more efficient, BEFORE the first significant snowfall.* Action: Snow emergencies were discussed on Area Scene by the both the City Manager, and Public information officer. Press releases were used early during the February event to alert citizens.

5. *Review the Snow Emergency ordinance and listed streets. Coordinate list with Hospital, Emergency Service Providers, and School District.* Action: The street superintendent met with representatives of Weber Bus Company to review bus routes and the City's snow removal routes. Routes were informally coordinated with the Kirksville R-III transportation office to confirm that the 2010 routes were essentially the same as the 2009 routes.

**Lessons Learned this winter**:

A detailed after action report was completed following the February storm. It is attached. Lessons learned listed in that report address not only the "blizzard", but winter operations over all.

Attachments:

March 1, 2010 Policy
After Action Report Winter Storm January 31-February 11, 2011
2010-2011 Snow and Ice Removal Report

**City of Kirksville, Missouri**
**Public Works Department/Street Maintenance Division**
**Snow and Ice Control Program**

**Introduction:**
Efforts to provide snow removal and ice control on Kirksville's 125 miles of streets and alleys rests with the Street Maintenance Division of the Public Works Department.

These guidelines are not intended to create any duty to any individual member of the public or to protect any particular or circumscribed class of persons. All or parts of these guidelines may be affected by at least one or more of the following which will delay all or some of the services provided:

- equipment breakdowns
- vehicles disabled in deep snow
- weather so severe as to cause crews to be called in from the streets, i.e. whiteout conditions
- equipment rendered inadequate by the depths of the snow or drifts;
  crew breaks, and breaks required for refueling, refilling of material spreaders and installing chains or new blades
- and unforeseen emergencies

Attempts to clear city streets can be exercised at any time of the day or night; and in that regard, snow and ice control efforts should be considered as emergency work. Considering that snow and ice removal is emergency in nature, the work must be accomplished as expeditiously as possible and consequently, planning and equipment preparation is normally completed prior the arrival of the snow season. Preparation for a snow and ice removal program can be, and frequently is, made extremely difficult by the combination of factors that arise during the snow and ice season. Rate and accumulation of snowfall, moisture content, temperature, time of day or night, wind velocity, and duration are all factors that interact to create a unique aspect for each storm with the result that no two storms are ever identical.

Because the nature of snow and ice, control operations are emergency in nature, widely scattered and of large scale; advanced planning and organization for removal of snow and ice is desired. Once a storm begins there is little time to effect efficient operational procedures of a major scale.

**Weather Forecasting:**
The key element in implementing an efficient snow and ice control program is weather forecasting. Advance warning of weather conditions building that will effect this immediate area is important as well as having warning while the crews are out working. The advance warning will also advise as to the method of snow and ice control to be implemented for a particular storm.
The Public Works Department relies on local and national weather service broadcasts for weather information. In addition, the Police Department has available in their office, a 24-hour weather channel. The Public Works Department will continue to rely on these services plus actual field conditions in the immediate area to determine when to mobilize and what equipment and materials to utilize.

**Personnel:**
Personnel can be assigned to 12 hour shifts (7:00 a.m. to 7:00 p.m. and 7:00 p.m. to 7:00 a.m.) and the 12 hour shifts are continued until such time as the snow has been sufficiently removed to go back to normal 8 hour work days. While snow removal operations are performed by personnel of the Street Division, assistance may be required from the Utility Maintenance Division. Should conditions warrant, in the opinion of the Public Works Director, private operators and equipment may also be employed. The

Departments Fleet Maintenance Garage will also provide personnel on standby in order to repair equipment after normal work hours.

**Alerting Snow and Ice Control Personnel:**

Snow and ice control operations may be conducted on a 24-hour basis, 7 days a week. Therefore, the Public Works Department is prepared to shift from the normal work week any time it becomes necessary to institute snow and ice control operations. Should conditions warrant holding city crews for snow and ice control work during the normal working day those individuals assigned to the day shift are held over for an additional four hour period with the night shift personnel leaving at 11:00 a.m. and reporting back at 7:00 p.m. in order to comprise two 12-hour shifts. In order to maximize the use of city equipment, operators & other departments may be assigned to the Public Works Department for the duration of the snow and ice emergency.

In the event it becomes necessary to begin snow and ice control operations during off duty hours, police officers may direct the police dispatcher to initiate the first crew response by notifying street supervisor or his designee, a current telephone call list is used to notify affected personnel. Dependability and cooperation among department personnel is essential to effective snow and ice control operation.

**General Snow and Ice Control Procedures:**

The City has been divided into six major snow and ice removal areas. Personnel are assigned to each of the areas by the Street Supervisor.

Each street in the City has been classified as a priority one (1) or priority two (2) street. Streets in the Priority I category consist of those streets that are hospital and emergency routes and major traffic carriers. Priority 1 streets will be cleared of snow prior to implementing snow and ice control operations on priority 2 streets. The only exception to this clearing operation is when an emergency situation arises (See Emergency Procedures Section.)

The following general guidelines have been established for snow and ice control operations in Kirksville.

1. Snowfall accumulation of up to two (2) inches, more or less, are generally handled (depending on weather conditions) by applying salt brine, salting, sanding, or combination of salt, sand, and calcium chloride. No salt will be placed on newly constructed streets for a period of at least one year.

2. Plowing operations generally do not begin unless snowfall accumulations measure more than two inches and show is falling and/or weather forecasts call for additional accumulation. Salting and snow plowing operations may be conducted concurrently and some of our vehicles can perform these dual operations at any time. De-icer abrasive addition can be used before the 2” accumulation.

3. The Public Works Director may make arrangements for private equipment to be used in the Central Business District. As additional private equipment is obtained beyond that needed for the Central Business District, assignments will be made to assist City crews in other areas of the community on the basis of a particular area’s need.

4. Snowplow operators are instructed to plow the street as close as possible to the curb line with minimum number of passes. Where sidewalks are close to the curb, drivers are instructed to minimize pushing snow onto sidewalks. In these locations snow may be stored in the street near the curb.

5. City-wide snow emergency parking restrictions will be implemented when snow conditions warrant. The Public Works Director, as directed by the City Manager, will place restrictions into effect after consultation.

These practices are of a general nature only and will depend to a great degree on storm factors, i.e. wind, temperature, moisture content, etc.

**Equipment:**

Of the total City equipment available for snow removal, it is the intent of the Public Works Department to utilize as much of this equipment on the street as possible; however, it is impractical to assume that all equipment will be operating and provisions must be made for equipment downtime.

Depending on storm conditions, additional equipment may be obtained from private firms to support the snow removal effort. The size of the fleet is adequate to handle the majority of snow and ice storms reasonably expected in an average snow season.

Exclusive of minor vehicle repair, the goal is to keep operational at least eighty percent of all Street Division equipment.

**Emergency Situations:**

Provisions must be made for situations involving emergencies; therefore, in the event Public Works receives notification of an emergency situation equipment necessary to handle the emergency has been resolved. In order to eliminate false emergency calls to the Public Works Department, it is preferable that emergency calls be routed through the Police Communications Center, those individuals in the Public Works Department receiving emergency calls will inform the caller that the Police will be notified of the emergency situation so as to be able to assist in handling the situation and to preclude false calls.

The Chief of Police is authorized to publicly announce that non-emergency travel is not recommended when, in his opinion, snow and ice conditions warrant such warning. Regulations as to the operation and parking of motor vehicles during Snow Emergencies are to remain as ordained by Ordinance, Section 15-432, and made a part of this program by reference.

In order to facilitate removal of snow, some City streets are designated Snow Routes by Ordinance and all parking will be banned on these streets whenever snow plowing and removal operations are hampered or could be hampered by parked vehicles.

Declaration of the parking ban on these streets will be made by an announcement to the news media. Enforcement of Ordinance Section 15-432 requires close cooperation between the Public Works Department and the Police Department.

**Standard Operating Procedures:**

This S 0 P contains statements of policy and directives basic to the organization and operation for the chemical and abrasive program and snow plowing program.

1. The City Manager, the Public Works Director, and the Street Supervisor or his designee, are the only individuals authorized to institute a snow and ice control program. Field operations shall be directed by the Street Supervisor who may delegate authority to begin snow and ice control operations.

2. Supervisors shall be responsible for providing snow and ice control maps and/or written route descriptions to equipment operators. Equipment operators/drivers are expected to keep this information available in the vehicle and to request additional copies of this information if it has been lost or damaged.

3. Equipment operators and other personnel required in snow and ice control operations can be assigned to twelve hour shifts (7:00 a.m. to 7:00 p.m. or 7:00 p.m. to 7:00 a.m.) until such time as the streets are cleared of snow. The Street Superintendent or his designee shall determine shift assignments.

**Chemical And Abrasive Material Spreading:**

Generally, five combinations of material will be used for snow and ice control operations. These are salt brine, straight salt, salt mixed with slag mix and calcium chloride, salt mixed with slag mix or other abrasive, or straight abrasives. Rates of material spreading and combinations of the various materials will depend on the prevailing weather conditions and the Street Supervisor or his designee shall determine the application rate and materials to be used.

**Snow Plowing Operations:**

1. The guideline to be used to begin snow plowing operations is generally when accumulation has reached two inches (2") more or less on the majority of the Priority 1 streets and snow is falling and/or forecasts predict significant additional snowfall. Abrasives or de-icers may be used before snow accumulates to this point.

Every street has been assigned a plowing priority. These designations will either be Priority 1 or Priority 2. In any given area Priority I streets will be plowed before Priority 2 street are started. If all the Priority 1 streets have been plowed and the Priority 2 streets has commenced and it begins to snow again sufficiently to require re-plowing, then the Priority I streets would be reinstated before resuming work on the Priority 2 streets.

2. The Street Supervisor and Equipment Operators are expected to be knowledgeable of areas where sidewalks are close to the curb and where medians exist and must make every effort to avoid plowing snow onto sidewalks. Supervision will inform equipment operators new to a particular area where sidewalks are close to the curb. Drivers are not to turn around their equipment or vehicles in residents' driveways unless absolutely necessary.

3. Drivers will not plow or remove snow from known private drives or streets. Time limitations prevent the removal of windrows, as well.

4. Equipment operators are expected to inspect equipment prior to leaving the Public Works yard area to be sure equipment is in proper working condition. Brakes, lights, horns, turn signals, plow and/or material hydraulic steering, cutting blades, edges, snow chains, fluid levels and tires should be checked. Operators must check fuel tanks before taking the vehicle into the field. Any malfunction of the equipment must be reported to the operator's immediate supervisor and to the Central Garage Supervisor.

5. Snow hauling operations in the Central Business District will be done when snow accumulations measure more than 2 inches. If forecast calls for additional accumulations, snow will only be removed from driving lanes. When snow storm has ended, snow will be removed from streets and parking areas. This will be done at night when practical, so as to avoid heavy traffic.

6. Individuals operating vehicles and equipment who are involved in an accident are required to report the accident to their supervisor at once. In addition, all operators are expected to contact the Police Communications Center before vehicles involved in such accidents are moved. Operators must also complete and submit an accident report to their immediate supervisor as directed.

7. Equipment operators are instructed to obey all traffic regulations during snow removal operations.

**Cul-De-Sacs:**

Most snow removal equipment cannot plow circles because of the tight turning required. As a result cul-de-sacs are plowed by smaller equipment and after all the other residential streets are done.

**Mail Boxes:**
It is the property owner's responsibility to clear snow from a mailbox. When plowing snow, mailboxes are sometimes unavoidably blocked by operation.

The City will inspect the mailbox after receiving the snowplow damage request. If it is determined that the mailbox was physically hit by a snow plow, the City staff will install a standard wooden post and metal box. If the resident has a custom mailbox and it cannot be repaired, the City will reimburse the resident $50.00. If the damage was caused by windrow, wet, or heavy snow, etc… the City will not compensate the resident for the damage.

**Ordinances Included By Reference:**
Ordinance Section 15-432 Emergency Snow Routes; Ordinance Section 15-462 - Restricting Parking in Business District.

**Snow Route Area Maps:**
The Public Works Director shall maintain in his office the map showing the Priority 1 Streets. Criteria for determining Priority 1 streets includes such items as bus routes, primary routes to emergency facilities and major arterial streets.

Last Revised: March 1, 2010

Public Works Department
City of Kirksville, MO

After Action Report
Winter Storm, January 31-February 11, 2011

March 12, 2011

Summary:

The NWS began forecasting a significant storm event for Northeast Missouri in late January. On January 30, 2011 they issued a report headlined "Significant Winter Storm First Half of Work Week". Call out crews treated emergency routes on Sunday, January 30, based on forecast of up to 0.1 inch of ice. On Monday, January 31 Street department crews were organized into two shifts, and the second shift left at 11:00 am to rest. Drivers from Utility Maintenance were assigned to assist street crews with snow plowing. Crews focused on preparing equipment, and pretreating streets. Emergency planners met at 9:00 am on February 1, and the EOC was opened at noon. A snow emergency was declared on Monday afternoon, effective at 6:00 am Tuesday February 1. PW crews took tasks from the EOC from that point until it was closed at 12:00 pm on Wednesday February 2. Snowfall began at approximately 10:00 am on February 1. Snow removal operations began at about 1:00 pm on February 1 as accumulation developed. Crews focused on clearing and maintaining emergency routes thru the storm. By 2:00 am on February 2 snowfall and winds had subsided to the point where at least limited visibility was restored. Crews supplemented by Utility Maintenance personnel continued to clear primary routes, and began to open secondary routes. Work to clear secondary (local) streets continued through Wednesday. Crews began clearing the downtown area at 5:00 pm on February 2, and snow on Franklin from Patterson to Normal was moved to and stored in the center turn lane. Snow removal downtown continued thru the night and into the day of February 4. The snow emergency was lifted at 6:00 am on February 3. Crews hauled stored snow from Franklin Street on Friday, February 4 from 8:30 am until 11:00 am. Crews continued to clear piled snow from downtown and to widen secondary roads. 24 hour operations were terminated at 7:00 pm on February 4th. Two loaders and the large tractor were sent to the Airport on February 5 to assist in clearing aprons, taxiways, and hanger areas. Street crews continued to clear downtown and secondary areas on Saturday and Sunday, and plow trucks ran the perimeter streets to clear any drifting during daylight hours. Clean-up of intersections, alleys, and City parking areas continued thru the work week of February 7-11.

Weather:

The City's last significant snow before this event was 3 inches on January 23-24, and Kirksville had received approximately 12 inches of snow in January prior to this storm. There were still areas with packed snow in parking areas, but streets and driving surfaces were clear on January 30. There was a brief period of light freezing fog on Sunday night, and a period of freezing rain from about 5 pm until 6 pm on Monday evening. After an overcast early morning, snow began to fall between 9 am and 10 am on February 1. Snow accumulation was approximately 2 inches by 1:00 pm. Snow continued to fall thru the evening, and winds became stronger as the sun set. By 7 pm full blizzard conditions existed throughout the county, and drifting had closed Route B and other outlying areas. Snow continued until after midnight, although some weather channels reported it ended at about 11. By 3 am Wednesday, February 2 snowfall had stopped, and winds began to subside. Visibility improved dramatically. Temperatures dropped and continued to fall. On February 3 the high was only 15 degrees and the low was 5 below zero. Cold temperatures and dangerous wind chills continued thru February 10. Approximately ½ inch of snow fell overnight on Saturday-Sunday February 5-6. The recorded snow fall on February 2 was 14 inches. This is the second highest one-day snow fall recorded for Kirksville,

ranking behind 18 inches on 1/26/1967. The total snow depth maximum was 16 inches, which is far below the record max of 27 inches in 1979.

Public Works Response:

Daily work orders for the street department are attached. Overall effort is summarized on the enclosed 2010-2011 Winter Report (effort) and Snow and Ice Removal Report (costs).

January 30-31: Crews treated streets and dealt with light icing and snow on the 31st. Emergency routes were pre-treated. Resources included 120 regular hours, 24 overtime hours, and 144 equipment hours. Plow trucks covered 33 miles (roughly twice over emergency routes) and used 36 tons of salt.

February 1-February 2: Snow removal and emergency plowing began at 1:00 pm on February 1, and continued non-stop until 7:00 am on February 2. During the 7:00 pm to 7:00 am shift the street crews were supplemented with 5 members of the Utility Maintenance Division. All available plows were on the street as well as the John Deere tractor, both large loaders, and two back-hoes. In addition to attempts to keep the emergency routes open, crews rescued and recovered two Adair county sheriff deputy vehicles, pulled one KPD officer out of a ditch, recovered a tractor/semitrailer which had run off the shoulder and gotten stuck on Highway 6 west, and responded to two calls to assist Adair County Road and Bridge Department maintainer/plows which had gotten stuck near the City limits. Plows escorted one ambulance run, and assisted in transport of crews for the Water Treatment Plant and for replacement operators for the next shift. Crews operated as teams during much of the storm in an effort to overcome almost zero visibility, and to deal with drifting conditions which caused the plow trucks to repeatedly loose traction and get stuck. During the 48 hours which included the storm and immediate recovery, crews used over $41,500 for equipment hours and overtime.

February 3-February 4. Crews began piling snow downtown at 5:00 pm on Wednesday, Feb 2. The combined street and utility maintenance crew began hauling snow at 7:00 pm on the 2nd, and continued thru the night, and all day February 3. The square was clear by 6:00 am on February 3 when the snow emergency was lifted, and parking on snow routes was allowed. Storage for snow at Washington and Osteopathy was exhausted on the 2nd, and operations were moved to Missouri and Osteopathy. After the second area was filled, snow was hauled to the former brush site on Burton Street. On Friday staff coordinated with TSU and emergency services and closed Franklin Street from Normal south to Patterson. Truman State gave permission to stockpile snow on their property south of LaHarpe along Bear Creek. Snow was loaded and hauled between 9:00 am and 11:30 am Friday morning, with limited disruption of campus activity. Hauling for piles around the downtown continued Friday and thru the weekend. Crews continued to clear and widen secondary streets, and cleaned city parking areas downtown. Round the clock operations ended at 7:00 pm on Friday, February 4.

February 5-February 6. The two large loaders and the John Deere tractor and plow with operators were sent to the Airport to assist staff there clear aprons, taxiways, and hanger areas, and to help push back snow piles. Other street department personnel cleared drifted areas, and responded to complaints of slick intersections following the light snowfall overnight on the 5th.

February 7-February 11: The City borrowed a John Deere loader mounted V-plow from MoDOT for use on Monday and Tuesday. This plow was heavy enough to push compacted snow on secondary streets which had not been widened. Weber Bus Company began transporting students on Feb 7. The street superintendent met with Weber's following the morning run and identified areas which did not permit busses to turn, and where there were visual obstructions on City right of way. Crews moved snow on Hamilton and Cottage Grove at the request of KV R-III administration. Crews continued to clear drifts as they occurred, and to clear snow piles which obstructed drivers' views. On Thursday crews coordinated

with Truman Grounds maintenance to assist in clearing sidewalks along Patterson, First, and Normal where the streets had been cleared leaving no place to move snow from sidewalks.

Water and Wastewater: The water treatment plant operated without incident thru the storm event. Street/Utility crews assisted with snow removal to permit delivery of chemicals on February 3. Call-out staff responded to emergency shut offs and one minor water leak between the 1st and 7th. The wastewater plant was snowed in; a loader had to be dispatched to assist WWTP staff to plow staff into the facility. There were no operational issues.

Impact: Kirksville Schools were dismissed at 12:30 on February 1. Classes did not resume until February 7. Truman State University cancelled classes on February 2 and 3. MACC cancelled classes on February 2-4. Kirksville City Hall was closed on February 2. The Adair County Courthouse was closed February 2-4. Most downtown businesses were closed on February 2, and some on the 3rd as well. All state highways were reported as snow covered from February 2 thru February 4. Lettered state routes were not cleared until late in the week.

Lessons Learned:

Early task organization was critical to early success in dealing with the storm. Crews were rested and ready to work when really needed at 7:00 pm on Tuesday.

Early declaration of the snow emergency cleared key routes of parked vehicles. Although some citizens complained that the City had put the parking ban in effect too early, it proved wise. If people coming on shift or going to class at 8 am had been allowed to park, the cars would never have been cleared by the time snow started accumulating at 11:00. The citizens complied amazingly well with the emergency declaration. Snow removal on emergency routes in almost zero visibility was accomplished without incident, largely because there were no parked cars to run into.

The emergency and priority route list should be reviewed. Priority routes were developed in coordination with the KV R-III school bus routes; however there appear to be some gaps based on recent development and changes in traffic patterns which will result from completion of the Alternate Highway 63 project. Every major subdivision is accessed by a priority route, should these links be upgraded to emergency routes?

Snow emergency parking restrictions should be reviewed. It is much easier to clear streets without cars parked on the side. On narrow streets it is impossible to get a snow plow down the street when cars are parked on both sides. In small snowfalls these streets may be bypassed, and left to Mother Nature; that is not acceptable in larger snowfall. The most problematic areas are around the TSU campus and the older streets west of First Street. In snow emergencies (for example a predicted snowfall of 8 inches or more) should all on-street parking be prohibited, or should parking on designated emergency routes and all streets less than 24 feet wide be prohibited?

The City needs at least one heavier plow to deal with drifts in major storms. The use of loaders to bust drifts is not efficient, and loaders were key in repeated recovery of stuck plows. One loader mounted plow should be added to the fleet.

While the EOC was operating all calls for assistance were routed thru the EOC staff and relayed to public works. This worked very well. After the EOC was closed, calls were going to the E-911, KPD, City Hall, and directly to Public Works. After 4:00 pm calls to Public Works were routed to dispatch. EOC operated for 24 hours; public works operated 24 hours a day for 5 days. Messages were passed by a

dispatcher dropping down to the PW radio frequency or by calling a PW supervisor on cell phone. A better communications link between dispatch and PW is needed after the EOC is closed.

The investment in properly sized and regularly replaced equipment is justified. Only one vehicle broke down during the storm, truck 277, a 1 ton 2006 plow truck, which was lost due to a rear differential failure. All other equipment problems were resolved within hours.

The stock of air filters for key diesel equipment needs to increased. Blowing snow caused rapid clogging of filters on tractors and some trucks. Filters had to be swapped and thawed. Dealers and resupply sources were not available during parts of the storm.

There was a problem with several of the spreader boxes. The boxes were filled to provide traction, however salt was not spread during the storm, and after the temperature dropped, the salt would no longer feed. The trucks were brought into the shop when the plows were no longer needed and the salt blockages cleared. Operators may have to run the spreaders for short periods to keep the material from seizing in the spreader box.

The City needs an emergency fueling plan. The card reader at the MFA station would not accept City cards (although it would take cards on a single card system) during the height of the storm. The card reader on the diesel pump at the PW complex also failed. Personnel were able to sign vouchers at the local Ayerco Station for gasoline, however the only solution available, had MFA not been able to repair the card reader after Herculean effort, was to use a personal credit card at the Kum and Go station for diesel fuel.

A vehicle support plan for KPD should be developed. Patrol cars were useless during the storm, 4-wheel drive pickups were diverted from PW staff to KPD. A vehicle list could be provided to the EOC detailing location and capability of vehicles. PW supervisors vehicles were diverted to KPD, while vehicles belonging to departments which were not working remained parked at City Hall.

Clearing the downtown area demands a disproportionate amount of resources. It took almost as much manpower and equipment hours to clear the downtown area as it took to clear all the remaining streets. We failed to meet Council's standard of having the downtown area clear before the next business day after a snowfall. (Snow ended at 2:00 am on Feb 2, but crews were not available to be dedicated to downtown until 5:00 pm on Feb 2. Square was clear by 6:00 am on Feb 3, but clearing downtown continued all day the 3rd and into the 4th. It is recommended that staff consider purchasing a snow blower or truck loading system to reduce the equipment and loading time required during snows of 4 inches or more.

Additional areas for disposing of snow hauled from the downtown area need to be identified. Storage/disposal of snow was a significant problem, both for City crews and for private property owners. Many downtown parking areas, especially in apartment complexes, were cleared with the snow piled on the City right of way or on an adjoining property owner's area. Some private snow plowing contractors blocked alley's with snow or left piles blocking sight distance triangles at key intersections.

In an emergency, snow removal assets must be diverted to assist recovery of stranded motorists, support ambulance, fire department, and law enforcement. The work load could be reduced if emergency planners knew the cancellation polices of industries/facilities which operate on multiple shifts, and encourage them to make early announcement of cancelled late shifts to minimize unneeded traffic.

FEMA updated its equipment rental rates in September 2010. City work order spreadsheets were based on the older FEMA rates, and are being updated. Staff should check with FEMA each fall before the

snow season, and update rates if changed. Additionally the latest FEMA schedule includes equipment rates for not only trucks, but also for snow plows mounted on trucks and spreaders, making the rate for a fully equipped plow truck significantly more than we had been charging for just the truck. Work Orders will have to address both the truck, and truck in plow and spreader configuration.

John R. Buckwalter, PE
Public Works Director

**KIRKSVILLE CITY COUNCIL STUDY SESSION ATTACHMENT**

**SUBJECT**: Performance Contracting

**STUDY SESSION MEETING DATE**: March 21, 2011

**CITY DEPARTMENT**: Codes Department

**PREPARED BY**: Brad Selby, Codes & Planning Director

There are dozens of companies across the United States that provide what they call Performance Contracting Services to other companies or local governments. These services look at primarily energy savings, but have evolved into many repair and maintenance needs for buildings that might reduce future maintenance or repair costs, and would even go into areas that would be funded with capital dollars. These companies use engineers to evaluate savings for the customer, and then would even bid out the projects and perform basically as a General Contractor.

The thing that makes Performance Contracting unique, is that the selected vendor, after doing a detailed analysis of the customer's needs and determining the savings that should be experienced, would *guarantee* to the customer, in writing, that they would experience these savings in utility or other energy use costs, OR the vendor would pay the customer the difference in what was actually saved, versus what was projected.

City staff has been working with 3 companies: Honeywell, Schneider Electric, and Control Technology and Solutions (CTS), to determine if we have the potential for any substantial savings. All 3 of these companies have performed a preliminary analysis of the energy costs and other needs of the city, at no cost to us. All the companies have met with us and have provided a report of their findings and estimated savings.

It appears as though there are savings to be attained on these projects. Staff wants to discuss these potential savings with city council, to determine if they have an interest in pursuing any of these projects. If there is to be a next step in this project, it will cost the city money. The next step would be to select a vendor and have them to do a more in-depth analysis for any savings and to determine implementation costs. At that point, the City would still have the option to determine what projects it might pursue, and what projects would not be done.

City staff will present the findings of these companies to the council, and is requesting direction from the council on whether they believe the project has merit and to proceed, or not.

## Performance Contracting Vendor Comparison

The projects listed below are the projects that each company has identified after their preliminary assessment, as a project with energy savings, or as a project that we as a City need to have completed.

| Projects & Savings | CTS | Honeywell | Schneider |
|---|---|---|---|
| | | | |
| **City Hall**: | | | |
| Lighting retrofits | X | X | X |
| Occupancy sensors | X | X | |
| Centralized HVAC Controls | X | | |
| HVAC replacement | X | X | |
| Roof repair | | X | |
| Lighting control upgrade | X | X | |
| Radio Communication system repl. | | X | |
| Roof Replacement | X | | |
| Total Annual Savings Estimate | $ 14,618 | $ 4,337 | $ 3,165 |
| Project Cost Estimate | $ 233,315 | $ 421,076 | $ 20,000 |
| **TCRC**: | | | |
| Lighting retrofits | X | X | X |
| HVAC controls and zoning | | | X |
| HVAC replacement | | | X |
| Update of basement ceiling | X | | |
| Lighting control upgrade | X | X | X |
| Total Annual Savings Estimate | $ 3,577 | $ 2,701 | $ 103 |
| Project Cost Estimate | $ 34,407 | $ 32,897 | $ 130,000 |
| **Fire Department:** | | | |
| Retrofit lighting in bay area | X | X | |
| Occupancy sensors | X | | |
| Centralized HVAC controls | | | X |
| Infrared heating system in bay | X | X | |
| Lighting control upgrade | X | X | |
| Total Annual Savings Estimate | $ 3,707 | $ 4,532 | $ 1,592 |
| Project Cost Estimate | $ 46,450 | $ 46,653 | $ 2,000 |
| **Public Works:** | | | |
| Occupancy sensors | X | X | |
| High bay fluorescents in garage area | X | | |

| | | | |
|---|---|---|---|
| Centralized HVAC controls | | | X |
| Infrared heating system in garages | X | | |
| Complete garage shell insulation | | X | |
| Lighting control upgrade | X | X | X |
| Day lighting controls in central garage | | | X |
| Wind turbine generator | | X | |
| Total Annual Savings Estimate | $ 3,376 | $ 15,136 | $ 837 |
| Project Cost Estimate | $ 68,020 | $ 703,859 | $ 10,000 |
| | | | |
| **Police Department:** | | | |
| Lighting retrofits | X | X | X |
| Occupancy and photo sensors | X | | |
| Centralized HVAC controls | | | X |
| Heating furnace replacements | X | | |
| Lighting control upgrade | X | X | X |
| Total HVAC Replacement | | | X |
| Total Annual Savings Estimate | $ 4,976 | $ 1,458 | $ 1,868 |
| Project Cost Estimate | $ 76,939 | $ 32,680 | $ 100,000 |
| | | | |
| **Aquatic Center:** | | | |
| Occupancy sensors (locker rooms) | X | X | X |
| Centralized HVAC controls | | | X |
| Pool cover on inside pool | X | | X |
| Mechanical air handling sys. (lockers) | X | X | X |
| Mechanical air handling (inside pool) | X | X | X |
| Shell insulation over indoor pool | | X | |
| Improve overall building envelope | | X | |
| Install intelligent hot water controller | | X | |
| Install space cooling in indoor pool | | X | |
| Lighting & control upgrades | X | X | X |
| Total Annual Savings Estimate | $ 29,968 | $ 6,524 | $ 1,245 |
| Project Cost Estimate | $ 343,604 | $ 229,195 | $ 300,000 |
| | | | |
| **Airport:** | | | |
| Lighting retrofits | X | X | X |
| Occupancy sensors | X | | |
| Centralized HVAC controls | X | X | X |
| HVAC replacement | X | | |
| | | | |
| **Airport (cont'd):** | | | |
| Replacement windows | X | X | |
| Construct vestibule entry | X | | |
| Roof replacement | X | | |
| Runway lights retrofit | X | | |

| | | | |
|---|---|---|---|
| Taxiway lighting replaced with LED's | X | | |
| Improve Building Envelope | | X | X |
| Roof repairs where needed | | X | |
| Lighting Controls upgrades | X | X | |
| Total Annual Savings Estimate | $ 11,919 | $ 3,997 | $ 1,680 |
| Project Cost Estimate | $ 303,321 | $ 89,247 | $ 8,000 |
| | | | |
| **Water Plant:** | | | |
| Finish lighting retrofit | X | | |
| Waste water lift station | | X | |
| Total Annual Savings Estimate | (in PW #'s) | -0- | |
| Project Cost Estimate | (in PW #'s) | $ 291,393 | |
| | | | |
| **Finance:** | | | |
| Install an AMR system (automatic meter reading for water meters) | X | X | X |
| Estimated revenue enhancement | $ 184,016 | $ 455,436 | $ 260,000 |
| Estimated operational savings | $ 79,953 | -0- | $ 108,000 |
| AMR Total Annual Savings Estimate | $ 263,969 | $ 455,436 | $ 368,000 |
| Project Cost Estimate | $ 2,547,532 | $ 2,600,937 | $ 3,800,000 |
| | | | |
| **Annual Estimate of Potential energy savings for ALL facilities:** | **$ 73,314** | **$ 38,687** | **$ 10,489** |
| **Approximate savings % of electric and gas utility costs** | **40%** | **28%** | **8%** |
| **Total Annual Savings estimates for ALL projects, including AMR's** | **$ 337,283** | **$ 494,123** | **$ 378,489** |
| **Total Implementation Costs of ALL projects, including AMR's** | **$ 3,653,588 (10.8 yrs payback)** | **$ 4,447,937 (9.0 yrs payback)** | **$ 4,370,000 (11.5 yrs payback)** |

Notes:

1. CTS's numbers include their "base" plans for improvements, plus 6 "additional facility needs" projects, which are:
    a. City Hall HVAC and roof
    b. KPD HVAC replacement
    c. KFD I.R. heating in bay
    d. TCRC HVAC, carpet, ceiling, and tile replacements
    e. I.R. heaters in garage at PW

f. Airport windows and vestibule.

If these items were removed from savings and implementation costs, the total payback number would go from 10.8 years to 9.5 years.

2. Honeywell's bid for City Hall includes the work for replacing the existing Radio Communications equipment (911) that will become obsolete due to the frequencies required by the FCC in a few years, as well as a lift station installation. There are no savings associated with either of these projects. The waste water lift station is at the water plant, because we are currently discharging process water to the ditch.

3. Schneider does not want to make any additional suggestions for City Hall until after the structural analysis has been completed. Schneider's proposal listed "additional opportunities" for enhancements that were: runway and taxiway Lighting for the Airport, an air curtain on the airport terminal building cargo door, a lift pump station replacement, and airport roof replacement. These projects are NOT included in the numbers above because there were no savings numbers established for them, and no estimated project costs.

4. Note also that Schneider's estimate for installation of the AMR system is one million dollars higher than the other two. Don't know if this is just way off, or if the other two quotes are low. It makes a huge difference in the payback time. If Schneider was at the same price range as the other two, they would have the shortest payback at 8.9 years.

# *Missouri Revised Statutes*

## Chapter 8
## State Buildings and Lands
## Section *8.231*

August 28, 2010

**Guaranteed energy cost savings contracts, definitions--bids required, when--proposal request to include what--contract, to whom awarded, to contain certain guarantees.**

8.231. 1. For purposes of this section, the following terms shall mean:

(1) "Energy cost savings measure", a training program or facility alteration designed to reduce energy consumption or operating costs, and may include one or more of the following:

(a) Insulation of the building structure or systems within the building;

(b) Storm windows or doors, caulking or weather stripping, multiglazed windows or doors, heat absorbing or heat reflective glazed and coated window or door systems, additional glazing reductions in glass area, or other window and door system modifications that reduce energy consumption;

(c) Automated or computerized energy control system;

(d) Heating, ventilating or air conditioning system modifications or replacements;

(e) Replacement or modification of lighting fixtures to increase the energy efficiency of the lighting system without increasing the overall illumination of a facility, unless an increase in illumination is necessary to conform to the applicable state or local building code for the lighting system after the proposed modifications are made;

(f) Indoor air quality improvements to increase air quality that conforms to the applicable state or local building code requirements;

(g) Energy recovery systems;

(h) Cogeneration systems that produce steam or forms of energy such as heat, as well as electricity, for use primarily within a building or complex of buildings;

(i) Any life safety measures that provide long-term operating cost reductions and are in compliance with state and local codes;

(j) Building operation programs that reduce the operating costs; or

(k) Any life safety measures related to compliance with the Americans With Disabilities Act, 42 U.S.C. Section 12101, et seq., that provide long-term operating cost reductions and are in compliance with state and local codes;

(2) "Governmental unit", a state government agency, department, institution, college, university, technical school, legislative body or other establishment or official of the executive, judicial or legislative branches of this state authorized by law to enter into contracts, including all local political subdivisions such as counties, municipalities, public school districts or public service or special purpose districts;

(3) "Guaranteed energy cost savings contract", a contract for the implementation of one or more such measures. The contract shall provide that all payments, except obligations on termination of the contract before its expiration, are to be made over time and the energy cost savings are guaranteed to the extent necessary to make payments for the systems. Guaranteed energy cost savings contracts shall be considered public works contracts to the extent that they provide for capital improvements to existing facilities;

(4) "Operational savings", expenses eliminated and future replacement expenditures avoided as a result of new equipment installed or services performed;

(5) "Qualified provider", a person or business experienced in the design, implementation and installation of energy cost savings measures;

(6) "Request for proposals" or "RFP", a negotiated procurement.

2. No governmental unit shall enter into a guaranteed energy cost savings contract until competitive proposals therefor have been solicited by the means most likely to reach those contractors interested in offering the required services, including but not limited to direct mail solicitation, electronic mail and public announcement on bulletin boards, physical or electronic. The request for proposal shall include the following:

(1) The name and address of the governmental unit;

(2) The name, address, title and phone number of a contact person;

(3) The date, time and place where proposals shall be received;

(4) The evaluation criteria for assessing the proposals; and

(5) Any other stipulations and clarifications the governmental unit may require.

3. The governmental unit shall award a contract to the qualified provider that provides the lowest and best proposal which meets the needs of the unit if it finds that the amount it would spend on the energy cost savings measures recommended in the proposal would not exceed the amount of energy or operational savings, or both, within a fifteen-year period from the date installation is complete, if the recommendations in the proposal are followed. The governmental unit shall have the right to reject any and all bids.

4. The guaranteed energy cost savings contract shall include a written guarantee of the qualified provider that either the energy or operational cost savings, or both, will meet or exceed the costs of the energy cost savings measures, adjusted for inflation, within fifteen years. The qualified provider shall reimburse the governmental unit for any shortfall of guaranteed energy cost savings on an annual basis. The guaranteed energy cost savings contract may provide for payments over a period of time, not to exceed fifteen years, subject to appropriation of funds therefor.

5. The governmental unit shall include in its annual budget and appropriations measures for each fiscal year any amounts payable under guaranteed energy savings contracts during that fiscal year.

6. A governmental unit may use designated funds for any guaranteed energy cost savings contract including purchases using installment payment contracts or lease purchase agreements, so long as that use is consistent with the purpose of the appropriation.

7. Notwithstanding any provision of this section to the contrary, a not-for-profit corporation incorporated pursuant to chapter 355 and operating primarily for educational purposes in cooperation with public or private schools shall be exempt from the provisions of this section.

(L. 1997 S.B. 408 § 1, A.L. 2002 S.B. 810 merged with S.B. 1012)

# 2010-2011 Winter Report

| Month | Date Start | Date End | Snow Inches | Ice Inches | Manpower Regular | Manpower OT | Equipment Hours | Salt Tons | Brine (Gal) | Snow Plow/Miles | Snow Loads |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **December** | 12/12/2010 | 12/13/2010 | 4 | | | 105.00 | 94 | 3 | 6,000 | 1,348.00 | 38 |
| | 12/16/2010 | 12/16/2010 | | 0.1 | 88.00 | 20.00 | 70 | 13.2 | 9,900 | 619.70 | |
| | 12/24/2010 | 12/25/2010 | 3 | | | 136.00 | 127 | 34.5 | 20,000 | 1,202.20 | |
| | | **Totals** | **7** | **0.1** | **88.00** | **261.00** | **291** | **50.7** | **35,900** | **3,169.90** | **38** |
| **January** | 1/7/2011 | 1/7/2011 | 0.5 | | 54.00 | | 35 | 6.6 | 3,500 | 325.00 | |
| | 1/10/2011 | 1/12/2011 | 4 | | 364.00 | 76.00 | 405 | 82.3 | 6,200 | 2,501.00 | 173 |
| | 1/19/2011 | 1/21/2011 | 4.5 | | 250.00 | 38.00 | 269 | 57 | | 1,634.70 | 64 |
| | 1/23/2011 | 1/24/2011 | 3 | | 111.25 | 97.50 | 191 | 47 | | 1,200.00 | 69 |
| | 1/31/2011 | 1/31/2011 | 1 | | 120.00 | 24.00 | 144 | 36.3 | | 333.00 | |
| | | **Totals** | **13** | **0** | **899.25** | **235.50** | **1,044** | **229.2** | **9,700** | **5,993.70** | **306** |
| **February** | 2/1/2011 | 2/7/2011 | 14 | | 808.00 | 553.00 | 1,340 | 17.6 | | 2,060.00 | 1,354 |
| | 2/24/2011 | 2/25/2011 | 6 | | 168.00 | 111.50 | 213 | 60 | | 1,252.00 | 124 |
| | 2/27/2011 | 2/27/2011 | | 0.05 | | 11.00 | 10 | | 2,200 | 120.00 | |
| | | **Totals** | **20** | **0.05** | **976.00** | **675.50** | **1,563** | **77.6** | **2,200** | | **1,478** |
| **March** | | | | | | | | | | | |
| | | **Totals** | **0** | **0** | **0.00** | **0.00** | **0** | **0** | **0** | | **0** |
| | | **Winter Totals** | **40** | **0.15** | **1,963.25** | **1,172.00** | **2,898** | **357.5** | **47,800** | **9,163.60** | **1,822** |

# 2010/2011 Snow & Ice Removal Report

As of 2/27/11

| Snow Plowed | 2009/2010 | 2010/2011 |
|---|---|---|
| Labor Hours | 1,300.00 | 1,402.00 |
| Overtime Hours | 875.25 | 969.00 |
| Total Labor Cost | $48,218.17 | $54,050.36 |
| Material Cost | $65,332.12 | $31,165.57 |
| Equipment Cost | $77,890.00 | $101,301.50 |
| Miles Plowed | 16,908.9 | 11,555.9 |
| **Total Cost** | **$191,440.29** | **$186,517.43** |

| Ice Control | 2009/2010 | 2010/2011 |
|---|---|---|
| Labor Hours | 102.50 | 88.00 |
| Overtime Hours | 32.00 | 31.00 |
| Total Labor Cost | $2,926.44 | $2,690.02 |
| Material Cost | $4,102.30 | $2,228.97 |
| Equipment Cost | $3,510.00 | $3,882.00 |
| Mileage | 779 | 740 |
| **Total Cost** | **$10,538.74** | **$8,800.99** |

| Snow Hauled | 2009/2010 | 2010/2011 |
|---|---|---|
| Labor Hours | 215.00 | 473.25 |
| Overtime Hours | 207.25 | 172.00 |
| Total Labor Cost | $9,709.90 | $13,315.08 |
| Material Cost | $1,011.67 | |
| Equipment Cost | $21,413.50 | $31,801.25 |
| Loads Hauled | 706 | 1822 |
| **Total Cost** | **$32,135.07** | **$45,116.33** |
| | | |
| Material Handling | | |

| Total Materials Used | 2009/2010 | 2010/2011 |
|---|---|---|
| Salt (tons) | 824.8 | 357.5 |
| Geo Melt(Gal) | 4,948.8 | 2,145.0 |
| **Total Cost** | **$44,992.84** | **$31,041.73** |
| Salt Brine (Gal) | 600 | 47800 |
| Salt Brine Cost | **$42.00** | **$4,780.00** |
| Sand (tons) | | 67.82 |
| Sand Cost | | **$857.92** |
| Ice Melt Cost | | |
| **Grand Total Cost** | **$44,992.84** | **$36,679.65** |

| Sidewalk Maint. | 2009/2010 | 2010/2011 |
|---|---|---|
| Labor Hours | | |
| Overtime Hours | | |
| Total Labor Cost | | |
| Material Cost | | |
| Equipment Cost | | |
| Mileage | | |
| **Total Cost** | **$0.00** | **$0.00** |

| Snow | 2009/2010 | 2010/2011 |
|---|---|---|
| Inches | 44.5 | 40 |
| **Ice** | **2009/2010** | **2010/2011** |
| Inches | 0.1 | 0.15 |

| Totals All Snow / Ice | 2009/2010 | 2010/2011 |
|---|---|---|
| Labor Hours | 1,617.50 | 1,963.25 |
| Overtime Hours | 1,114.50 | 1,172.00 |
| Total Labor Cost | $60,854.51 | $70,055.46 |
| Material Cost | $70,446.09 | $33,394.54 |
| Equipment Cost | $102,813.50 | $136,984.75 |
| Material Handling Cost | $0.00 | $0.00 |
| Loads Hauled | 706.00 | 1,822.00 |
| **Total Cost** | **$234,114.10** | **$240,434.75** |

# 2009/2010 Snow & Ice Removal Report

| Snow Plowed | 2008/2009 | 2009/2010 |
|---|---|---|
| Labor Hours | 817.00 | 1,300.00 |
| Overtime Hours | 657.00 | 859.25 |
| Total Labor Cost | $32,627.17 | $47,738.41 |
| Material Cost | $43,048.04 | $65,161.16 |
| Equipment Cost | $15,623.88 | $77,260.00 |
| Miles Plowed | 10,109.2 | 16,784.9 |
| **Total Cost** | **$91,299.09** | **$190,159.57** |

as of 02/25/10

| Snow Hauled | 2008/2009 | 2009/2010 |
|---|---|---|
| Labor Hours | 24.00 | 215.00 |
| Overtime Hours | 172.30 | 207.25 |
| Total Labor Cost | $4,910.67 | $9,709.90 |
| Material Cost | $824.93 | $1,011.67 |
| Equipment Cost | $5,287.38 | $21,413.50 |
| Loads Hauled | 496 | 706 |
| **Total Cost** | **$11,022.98** | **$32,135.07** |
| | | |
| Material Handling | | |

| Sidewalk Maint. | 2008/2009 | 2009/2010 |
|---|---|---|
| Labor Hours | 24.00 | |
| Overtime Hours | 5.25 | |
| Total Labor Cost | $569.65 | |
| Material Cost | | |
| Equipment Cost | $232.50 | |
| Mileage | | |
| **Total Cost** | **$802.15** | **$0.00** |

| Ice Control | 2008/2009 | 2009/2010 |
|---|---|---|
| Labor Hours | 80.00 | 102.50 |
| Overtime Hours | 95.00 | 32.00 |
| Total Labor Cost | $3,986.08 | $2,926.44 |
| Material Cost | $448.24 | $4,102.30 |
| Equipment Cost | $2,474.45 | $3,510.00 |
| Mileage | 571 | 779 |
| **Total Cost** | **$6,908.77** | **$10,538.74** |

| Total Materials Used | 2008/2009 | 2009/2010 |
|---|---|---|
| Salt (tons) | 718.1 | 822.8 |
| Geo Melt(Gal) | 4,308.8 | 4,936.8 |
| **Total Cost** | **$39,174.54** | **$71,443.72** |
| Salt Brine (Gal) | | 600 |
| Salt Brine Cost | **$0.00** | **$42.00** |
| Sand (tons) | 25 | |
| Sand Cost | $175.00 | |
| Ice Melt Cost | | |
| **Grand Total Cost** | **$39,349.54** | **$71,485.72** |

| Snow | 2008/2009 | 2009/2010 |
|---|---|---|
| Inches | 17 | 41.5 |
| **Ice** | **2008/2009** | **2009/2010** |
| Inches | 3.5 | 0.1 |

| Totals All Snow / Ice | 2008/2009 | 2009/2010 |
|---|---|---|
| Labor Hours | 945.00 | 1,617.50 |
| Overtime Hours | 929.55 | 1,098.50 |
| Total Labor Cost | $42,093.57 | $60,374.75 |
| Material Cost | $44,321.21 | $70,275.13 |
| Equipment Cost | $23,618.21 | $102,183.50 |
| Material Handling Cost | $0.00 | $0.00 |
| Loads Hauled | 496.00 | 706.00 |
| **Total Cost** | **$110,032.99** | **$232,833.38** |