Water Conservation and Water Rights

January 15, 2010

Presented by:
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Overview

- Conservation vs. Drought Management
- Wholesale vs. Retail Supply
- Water Code Requirements for Permitting
- IBT Requirements for Permitting
- Implications to Lower Bois d’Arc Creek Reservoir Project
- Significance of Model Water Conservation Plans and Consistent Implementation
Conservation vs. Drought Management

**Conservation**

- Those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. 30 TAC 288.1(4)
- Conservation is an ongoing activity and NTMWD boasts one of the largest reclaimed water projects in the State of Texas.

**Drought Management**

- A strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies. 30 TAC 288.1(5)
- Drought management is engaged when there are identified shortages of supply and NTMWD has adopted a consistent drought management protocol for all of its members and customers.
Wholesale vs. Retail Supply

Wholesale Providers
• Wholesalers provide water to retail public water systems, which in turn provide water to the end user
• NTMWD is the largest wholesale potable water provider in the State of Texas
• Wholesale water suppliers enter into water supply agreements with retail systems, and these contracts require implementing conservation and drought management techniques so the system operates uniformly

Retail Providers
• Retailers provide water to the end customer and have the individual user accounts
• NTMWD estimates that its wholesale customers, collectively, serve over 1.6 million people in the Metroplex area
• Retail providers have the relationship with the end user of the supply
**Water Code Requirements**

- Water rights granted with more than 1,000 acre-feet per year for municipal use must have a water conservation plan.
- Wholesale and retail water suppliers that serve more than 3,300 connections must have a water conservation plan.
- The Texas Water Code requires that the “applicant has provided evidence that reasonable diligence will be used to avoid waste and achieve water conservation.”
- All wholesale and retail water suppliers are required to develop a drought contingency plan.
Water Code Requirements for IBTs

• Interbasin transfer of water means the transport of water from another river basin into the Trinity River Basin

• Interbasin transfers of water require higher standard
  – TWC 11.085(l)(2) requires that “the applicant for the interbasin transfer has prepared a drought contingency plan and has developed and implemented a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the applicant.”
  – TWC 11.085(k)(2)(C) requires that the applicant has “proposed methods and efforts by the receiving basin to avoid waste and implement water conservation and drought contingency measures”
Lower Bois d’Arc Creek Reservoir

- Permit application submitted on Dec. 29, 2006
- Public meetings held during Sept. 10-13, 2007
- Application currently undergoing technical review
- Conservation is key piece of technical review
  - Highest practicable level of conservation
  - Review of NTMWD’s plans and model plans
  - Review of ongoing success in conservation
- Protesting parties have raised conservation as an issue for Metroplex, thereby challenging need for project
Consistency in Conservation

• NTMWD needs to demonstrate consistency in conservation among member cities and customers
• Consistency will help demonstrate “highest practicable level of conservation”
• Ammunition for protestants if some NTMWD members or customers are under-performing
• NTMWD has developed model plans for members and customers, which provide a foundation for consistency – issue at this time is implementation
Challenges Moving Forward

• Need to continue to promote conservation and reuse
• Need to work as a team of users to promote consistency with model plans
• Need for retail water suppliers to implement and enforce conservation plans with end users; as wholesale provider, NTMWD cannot impact conservation by end users
• Success requires group effort to ensure challenges to Lower Bois d’Arc Creek Reservoir project can be effectively addressed
QUESTIONS?

Thank You For Coming!
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Review of Upcoming Regulations

Member City & Customer Meeting

NORTH TEXAS MUNICIPAL WATER DISTRICT

January 15, 2010

Michael G. Morrison, P.E., BCEE
(512) 617-3150
UPCOMING REGULATORY CHANGES

• Revisions to the Consumer Confidence Report Rule
• New Ground Water Rule
• Lead and Copper Short Term Rule Revisions
• Disinfection Byproduct Stage 2 Rule
• Long Term 2 Enhanced Surface Water Treatment Rule
• Unregulated Contaminant Monitoring Regulations Second Cycle (UCMR2)
• Disinfection Level Quarterly Operating Report
• Nitrification in Distribution Systems
REVISIONS TO THE CONSUMER CONFIDENCE REPORT RULE

• Recent Rule Changes:
  ▪ Requires additional reporting language in the July 1, 2009 and July 1, 2010 CCR’s
  ▪ Water systems can expect to receive their templates by mail in early May. The templates will also be available online by County.

• Lead/Copper Reporting:
  ▪ All water systems are required by EPA to report the following language starting with the 2009 CCR to be delivered by July 1, 2010:
“If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. This water supply is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.”
Unregulated Contaminant Monitoring Regulations (UCMR) Reporting:

- The following statement includes mandatory language and should be used:

  “Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Any unregulated contaminants detected are reported in the following table. For additional information and data visit [http://www.epa.gov/safewater/ucmr/ucmr2/index.html](http://www.epa.gov/safewater/ucmr/ucmr2/index.html), or call the Safe Drinking Water Hotline at (800) 426-4791”
### Initial Distribution System Evaluation (IDSE) Reporting:

<table>
<thead>
<tr>
<th>Group</th>
<th>Population</th>
<th>IDSE Sampling Completed</th>
<th>Submit IDES Report</th>
<th>Start DBP2 Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>100,000 or more</td>
<td>Sept. 2008</td>
<td>Jan. 2009</td>
<td>April 2012</td>
</tr>
<tr>
<td>Group 4</td>
<td>Less than 10,000</td>
<td>March 2010</td>
<td>July 2010</td>
<td>Oct. 2014</td>
</tr>
</tbody>
</table>
• Group 1 and Group 2 must report sample results in the 2009 CCR.
• Group 3 and Group 4 must report sample results in the 2010 CCR.

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Average Level</th>
<th>Minimum Level</th>
<th>Maximum Level</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Haloacetic Acids</td>
<td>Insert Data</td>
<td>Insert Data</td>
<td>Insert Data</td>
<td>ppb</td>
</tr>
<tr>
<td>Total Trihalomethanes</td>
<td>Insert Data</td>
<td>Insert Data</td>
<td>Insert Data</td>
<td>ppb</td>
</tr>
</tbody>
</table>
IDES recommended language:

“This evaluation is sampling required by EPA to determine the range of total trihalomethanes and haloacetic acids in the system for future regulations. The samples are not used for compliance, and may have been collected under non-standard conditions. EPA requires the data to be reported here. Please contact your water system representative if you have any questions.”
• **Reporting of Violations:**

  - Violations of the Stage 1 Disinfection Byproduct Rule: Disinfectant Level Quarterly Reporting - Systems which fail to send in the quarterly disinfectant level quarterly operating report (DLQOR) must report these violations in their annual CCR in addition to the public notification requirements.
Violations of the Consumer Confidence Report Rule

Systems must report the following CCR violations:

- Failure to deliver to bill-paying customers
- Failure to deliver a copy of the annual CCR or certification of delivery to TCEQ

TCEQ’s Enforcement Division will levy fines for systems identified as non-compliant with CCR requirements.
REVISIONS TO THE CONSUMER CONFIDENCE REPORT RULE (CONT.)

CCR Resources:

- TCEQ –
  http://www.tceq.state.tx.us/permitting/water_supply/pd
  w/ccr/guidance/update.html or call Public Water Section at 512-239-4691

- TCEQ CCR Hotline at University of Texas at Arlington
  (866)941-5237

- EPA Safe Drinking Water Hotline at (800)426-4791
NEW GROUNDWATER RULE

• Source sampling compliance program for groundwater systems similar to the Total Coliform Rule (TCR).
• Program effective date was December 1, 2009.
• Applies to both Groundwater and Mixed Groundwater and Surface Water Systems.
• Under the new rule, when you get a total coliform positive result in any routine distribution system sample, you must sample every well feeding that distribution system (for the fecal indicator specified by TCEQ) within 24 hours). This includes purchased water sources. Your monitoring plan must include contact information for any systems that supply you with potable water for redistribution to ensure this information is readily available.
However, sampling can be limited to fewer wells if you have a TCEQ-approved Triggered Source Monitoring Plan [290.109(c)(4)(B)(ii)]. This monitoring plan describes the wells that feed each part of the distribution system. It goes with your monitoring plan’s raw water sampling section. When you get a positive distribution coliform sample, you only have to collect triggered raw samples at the well(s) feeding that specific location in the distribution system. Also, the monitoring plan should describe if you have a well field with multiple wells that have equivalent water quality.
A system that only has one well does not need to prepare a Triggered Source Monitoring Plan (TSMP). For more complex systems, it is highly recommended submitting a plan for TCEQ approval. This can save time and money for the system long term. Under some circumstances, TCEQ may require a system to have a Source Monitoring Plan.
There are three parts to the plan:

- A description of which wells feed each entry points and which coliform monitoring sites are related to these entry points.
- A justification that explains how one well is representative of a group of wells.
- A description of any interconnections with other systems that use wells.
NEW GROUNDWATER RULE (CONT.)

Summary of Information to be Included in a Triggered Source Water Monitoring Plan

These items should be included in a TSMP submitted to TCEQ for approval.

- Well log(s)
- State of Texas Well Report or driller’s logs with construction details and geological strata
- Well output (gpm)
- Method used
- Date measured
- Operational status of well
- Operational - active and in use
- Demand - active, but only used during times of high demand
- Emergency - active, but only used in emergency situations
- Test - active and in use (test indicates that the well is relatively new but has not been designated as operational by TCEQ)
- Seasonal - only used during specified times of the year
Maps

- Distribution system - wells labeled with TCEQ Source Code (e.g., G1234567A)
- Distribution system - sample sites labeled
- Pressure plane - with discussion of interaction between pressure planes
- List of Sources with raw water monitoring requirements (including reasons for monitoring)
- Wells with prior raw monitoring requirements cannot be used as representative wells in triggered source monitoring plans if there are construction issues, potential sources of contamination, etc.
NEW GROUNDWATER RULE (CONT.)

Tables

• Distribution sample sites with owner’s well name to correlate with distribution map labels; address of sample site; frequency of samples; sample site rotation schedule, etc.

• Well fields (including any representative well(s) and designated backup wells)

• Supply well(s) relationship to sample points – used by the system to determine which source samples to collect during a triggered sampling event; also shows representative well for each sample site; wells must be in same aquifer to be used as representative wells

• Plants claiming 4-log inactivation/removal of viruses

• Interconnections - description of any interconnections with other PWS

• Distribution system hydraulic modeling data/description (if applicable)
Corrective Actions:

- Correct all significant deficiencies
- Provide alternative source of water
- Eliminate source of contamination
- 4-log inactivation of virus
  - Requires continuous monitoring/recording of disinfectant residual, temperature, pH, flow.
  - Requires CT study/approval
  - Requires additional monthly operating report.
The new Lead and Copper Short Term Rule (LCSTR) became effective on October 10, 2007. TCEQ is currently implementing the new provisions.

The LCSTR addresses implementation issues with the existing rule

- Monitoring revisions (sample number and timing clarifications)
- Additional requirements for providing public information.
- Advanced notification of treatment changes and source additions
- Reevaluation of ‘tested-out’ lead service lines
LEAD AND COPPER SHORT TERM RULE REVISIONS (CONT.)

TCEQ has established the following requirements to meet the new rules:

1. Select sampling sites. To determine the number of sites they need, and to choose the most appropriate sites from which to collect samples.

2. Complete the Lead/Copper Sample Site Selection Form and Materials Survey Checklist (TCEQ form #20467).

3. Add a list of the schools and daycares that meet the sample site category #2 criteria as stated to the TCEQ Form #20467.

4. Develop or update their Corrosion Control Study and submit it by December 31, 2008 unless you request an extension.
5. Water Quality parameter (WQP) sampling must be done during the third period (July 1 through to September 30, 2009). Submit a WQP sample plan with lead/copper forms by December 31, 2009. The WQP sample results were due December 31, 2009.

6. Attach an exact map of service area showing the lead/copper and WQP site locations. They may include additional sites that meet the criteria for times when other sites are not available.
• Requires every Public Water Supply System to characterize the distribution system and identify monitoring sites where customers may be exposed to high levels of total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5)

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<td>Oct. 2014</td>
</tr>
</tbody>
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DISINFECTION BYPRODUCT STAGE 2 RULE (CONT.)

- **Approaching DBP2 Compliance**
- **Sample sites will be reviewed in 2011 for:**
  - Population changes
  - Distribution changes
  - New PWSs
  - System who received IDSE waivers
  - NTNC systems <10,000 population (were not required to complete IDSE but still must comply with DBP2)
**DISINFECTION BYPRODUCT STAGE 2 RULE (CONT.)**

- **Staying the same:**
  - MCLs (TTHM: 80 µg/L; HAA5: 60 µg/L)
  - Applies to all Community and NTNC PWSs
  - TCEQ has DBP Rule Primacy
- **The Challenge:**
  - Requires new site selection
  - Sample at highest DBP exposure sites
  - Compliance with MCLs based on *locational* running annual average (LRAA)
  - **Each site** must comply with MCL
District must assess the various source water supplies for cryptosporidium oocysts and E-coli levels

A system that has been assigned to Bin 3 or Bin 4 must achieve at least 1.0 log removal/inactivation of cryptosporidium using one or a combination of the following: bag filters, cartridge filters, chlorine dioxide, membranes, ozone, or ultraviolet light

<table>
<thead>
<tr>
<th>Crypto Level (oocysts/L)</th>
<th>Bin</th>
<th>Treatment Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.075</td>
<td>1</td>
<td>2.0-log</td>
</tr>
<tr>
<td>&gt;0.075 but &lt;1.0</td>
<td>2</td>
<td>4.0-log</td>
</tr>
<tr>
<td>&gt;1.0 but &lt;3.0</td>
<td>3</td>
<td>5.0-log</td>
</tr>
<tr>
<td>&gt;3.0</td>
<td>4</td>
<td>5.5-log</td>
</tr>
<tr>
<td>Systems that are not part of a combined system and serve....</td>
<td>Must begin first round monitoring</td>
<td>Must begin second round monitoring</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>At least 100,000</td>
<td>October 1, 2006</td>
<td>April 1, 2015</td>
</tr>
<tr>
<td>From 50,000 to 99,999</td>
<td>April 1, 2007</td>
<td>October 1, 2015</td>
</tr>
<tr>
<td>From 10,000 to 49,999</td>
<td>April 1, 2008</td>
<td>October 1, 2016</td>
</tr>
<tr>
<td>Fewer than 10,000 and monitor for E. coli</td>
<td>October 1, 2008</td>
<td>October 1, 2017</td>
</tr>
<tr>
<td>Fewer than 10,000 and monitor for Cryto.</td>
<td>April 1, 2010</td>
<td>April 1, 2019</td>
</tr>
</tbody>
</table>
UNREGULATED CONTAMINANT MONITORING REGULATIONS SECOND CYCLE (UCMR2)

- Tool for the U.S. EPA to find unregulated contaminants of concern in the nation’s drinking water
- All PWS over 10,000 people required to participate
- EPA has selected 25 contaminants for testing.
- 3 year program, with each PWS participating for 1 year.
- Surface water PWS’s are sampled four times per year.
- Only unregulated contaminants detected in Texas systems-NDMA (n-nitroso-dimethylamine) and NPYR (N-nitroso-pyrrolidine).
- These two emerging contaminants are candidates for regulations
PWSs that treat surface water already submit information about disinfectant residuals on their Surface Water Monthly Operating Reports (SWMOR’s)

Every PWS that uses groundwater or purchased water must keep track of the levels of disinfectant residual in its distribution system, and report these levels on the Disinfectant Level Quarterly Report (revised 5/14/2009) quarterly

Reports are submitted in January, April, July and October.

http://www.tceq.state.tx.us/permitting/water_supply/pdw/disinfection/dl_qor/index.html
Nitrification can present a problem due to the potential for violating the Total Coliform Rule or MCL’s for Nitrate and Nitrite.

Because disinfectant residuals can be depleted and heterotrophic plate counts (HPC) may be increased, there is a higher likelihood for the occurrence of coliform bacteria in excess of standards.

Recommended monitoring parameters include HPC’s, free and total ammonia, nitrite, nitrate, chloramine residual.

Samples should be taken from purchased water take point, reservoirs, dead-end mains and routine monitoring stations.

Sample frequency should be at least monthly and possibly weekly during seasons when the nitrification potential is high.
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Purchased Water</th>
<th>Reservoir Influent</th>
<th>Reservoir Effluent</th>
<th>Dead-end Mains</th>
<th>Coliform Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free ammonia</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Total ammonia</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Nitrite</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Nitrate</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Total Chlorine residual</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Inorganic chloramines</td>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organic chloramines</td>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monochloramines</td>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>Problem Areas</td>
<td></td>
<td>Secondary</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
<tr>
<td>pH</td>
<td>Problem Areas</td>
<td></td>
<td>Secondary</td>
<td>Secondary</td>
<td>Secondary</td>
</tr>
<tr>
<td>HPC ( R2A agar )</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
<td>Primary</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>Problem Areas</td>
<td></td>
<td>Problem Area</td>
<td>Problem Area</td>
<td>Problem Area</td>
</tr>
<tr>
<td>TOC</td>
<td>Problem Areas</td>
<td></td>
<td></td>
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<tr>
<td>DOC</td>
<td>Problem Areas</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>AOC</td>
<td>Problem Areas</td>
<td></td>
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</tr>
</tbody>
</table>
How Can I Stop Nitrification Once It Has Begun?

- The key to stopping nitrification is to starve the nitrifying bacteria of nitrogen. The most effective way to do this is to switch disinfectant from chloramine to free chlorine. When you take this step, keep these key points in mind:

- **30 days** before you switch, you must notify our Public Drinking Water Staff by letter or e-mail of this planned change in treatment method. Include this information in your notice to TCEQ:
  - PWS ID and name
  - PWS contact name, title, and phone
  - Estimated start and end date
  - PWS ID and names of customer systems
  - Reason for change in treatment (routine preventive maintenance; corrective maintenance due to nitrification)
NITRIFICATION IN DISTRIBUTION SYSTEMS (CONT.)

- Coordinate this treatment change with appropriate adjustments in your disinfection byproduct (DBP) sampling. In other words, your DBP sampling should accurately represent standard operating procedure.
- As a courtesy, notify your customers before the change occurs. Be sure to mention these points:
  - A temporary change has been made to the treatment process to improve the quality of water being served to our customers.
  - Some taste and odor changes may briefly occur, but there are no associated health risks.
  - The name and phone number of the person customers can contact at your water system if they have any questions.
It is fairly common for customers to notice (and complain about) changes in odor whenever you change disinfectants. Some customers will notice the different taste of free chlorine; others may notice when you switch back and the chloramine wavefront hits the chlorinated water in the distribution system. To minimize noticeable changes in odor, increase flushing of your distribution lines following each change. To determine where odors are most likely to be noticeable, monitor your distribution for both free and total chlorine until levels stabilize.
Ozonation Exception by 2014

- Ozone implementation by 2012, NTMWD seeks exception by 2014
- Exception request must be made by Member Cities and Customers
- NTMWD will send sample text to Member Cities and Customers for submission
Free Chlorine Burn

- Prevents nitrification within the distribution system
Lead and Copper Rule

- Beneficial information for Member and Customer Cities
TWDB 2009 Water Use Surveys

Water Use Surveys

http://www.twdb.state.tx.us/wrpi/wus/wus.htm

The 2009 water use survey forms will be mailed to utilities and facilities in January 2010. After the forms are mailed out, they will be posted to this web page. Please submit all 2009 information on the new survey forms. The Excel-version of the 2008 survey will not be accepted, but the new online survey application will be available by March of 2010.

If a water utility needs to submit water use information for previous years, please contact the Water Use Surveys & Estimates Team at (512) 463-7952
TCEQ 2010 Report Schedule

- TCEQ schedule of required reports by month for the year

Appendix D Reports

- Appendix D report
  - Due to NTMWD March 31, 2010
  - Reports emailed to each entity in December 2009
  - Highlighted areas for insertion of 2009 information

- If you received a blank report, this is because NTMWD did not receive a report from your organization the previous year
Initial Distribution System Evaluation (IDSE)

- Submit IDSE reports for NTMWD review
  - Provides information to determine priority locations
  - Provides NTMWD insight to effectiveness on treatment
    - DBP
    - pH results
    - Effectiveness of treatment
  - Prefer IDSE information quarterly

- NTMWD to send formal request to Member Cities and Customers for IDSE reports
Invasive Species

- Many invasive species
  - Zebra Mussels, quagga mussels, giant salvinia, golden algae and more...
  - Control vs. Irradiate

- Zebra Mussels identified in Lake Texoma
- TPWD sampled Lavon, currently none found
- NTMWD working with COE, TPWD
- NTMWD developing a strategic plan for sampling/control for zebra mussels
Regional Conservation Initiative

- NTMWD, DWU, and TRWD collaborating on regional conservation program
  - Possibility of combining media funds for larger media purchase (2010)
  - Utilizing same messaging for regional consistency (2011 or later)
NTMWD Personnel

- David Hartless passed away January 2, 2010

- **Bruce Cole**, Manager of Engineering, Planning & Construction Management

- **Buford Green** – responsible for the Bonham and Tawakoni Water Treatment Plants

- **Ted Kilpatrick** – responsible for the Wylie Water Treatment Plant

- **Olin Schiffman** – responsible for the transmission system, raw & treated water

- A Wetlands Manager position is in the budget for April 2010

For water system inquiries contact Ted Kilpatrick or Mike Rickman
Questions?