



City of Dallas Water Utilities Drought Management Update

September 20, 2006



Briefing Purpose

Provide an update on the current drought conditions and impact on the City's water supply, and obtain feedback on responses to drought stage implementation



Briefing Outline

- Drought Management Plan
- Current Drought Outlook & Water Supply Forecast
- Appendix
 - Stage Reduction Targets
 - Summary of Trigger Conditions
 - Selection Actions for Stages 3-4
 - Conservation Ordinance Highlights
 - Public Websites



Drought Management Plan



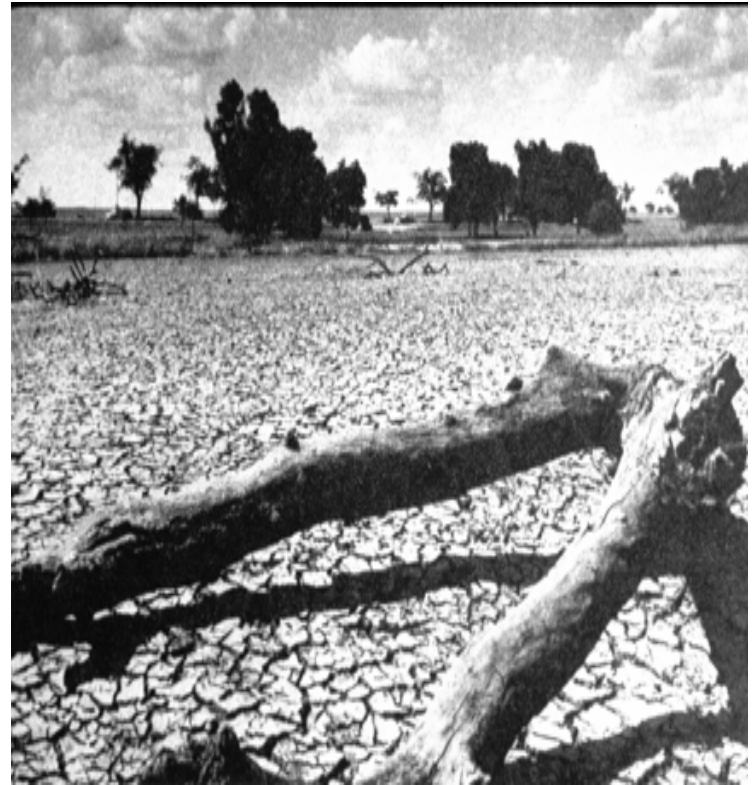
Comparison of Drought and Conservation Measures

- Conservation measures are used to achieve more efficient use of water resources
- Drought measures are restrictions used to ensure that water is available to meet public health, welfare, and safety needs

Conservation Examples	Drought Examples
Xeriscape	Restricting lawn watering
Time of Day Watering	Prohibiting permitting, filling or refilling swimming pools
Low Flow Showerheads	Prohibiting operation of ornamental fountains
Repairing leaking faucets	Prohibiting recreational water use
Reducing the frequency of watering lawns	Restrictions on washing of motor vehicles

Historical Drought & Drought-like Conditions

- Since 1822, at least one drought has hit somewhere in Texas every decade
- A drought can be generally defined as a period of relatively little or no rainfall
- Severe drought from 1951 - 57
 - Salty water diverted from Red River
 - City leaders vowed "never again"
- Drought conditions experienced in 1996, 2000 and since April 2005



White Rock Lake – 1950's



Drought Contingency Plan Criteria & Causes

- The Plan describes the conditions that require short-term water demand management and establishes policies and procedures that offer strategies for a timely response

POSSIBLE TRIGGERING CRITERIA	CAUSES
Reduction in Available Water Supplies	Drought
Treatment or Distribution System Capacity Limitations	Unusually High Peak Water Demands
System Vulnerability	Man-made or Natural Supply Source Contamination
System Failures	System Age and Condition Limitations
Other	Combinations Of The Above Or Unidentified Causes



Drought Management Plan

- Our drought management plan for water supply calls for the following trigger points:
 - Stage 1, Water Awareness (35% depleted)
 - Stage 2, Water Watch (45% depleted)
 - Stage 3, Water Warning (55% depleted)
 - Stage 4, Water Emergency (70% depleted)



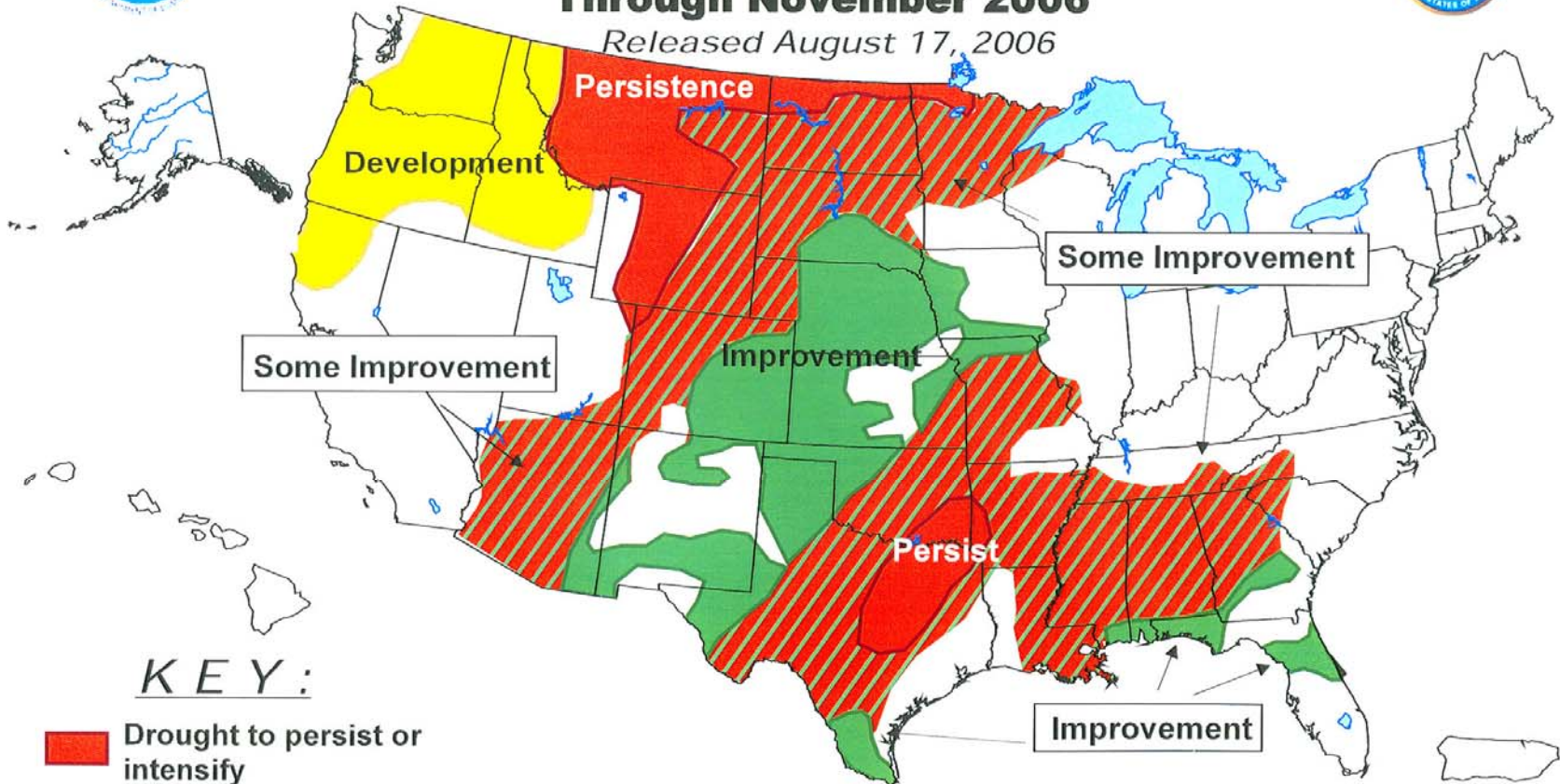
Current Drought Outlook & Water Supply Forecast



U.S. Seasonal Drought Outlook

Through November 2006

Released August 17, 2006



KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts general, large-scale trends based on subjectively derived probabilities guided by numerous indicators, including short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance, so use caution if using this outlook for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4). For weekly drought updates, see the latest Drought Monitor map and text. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

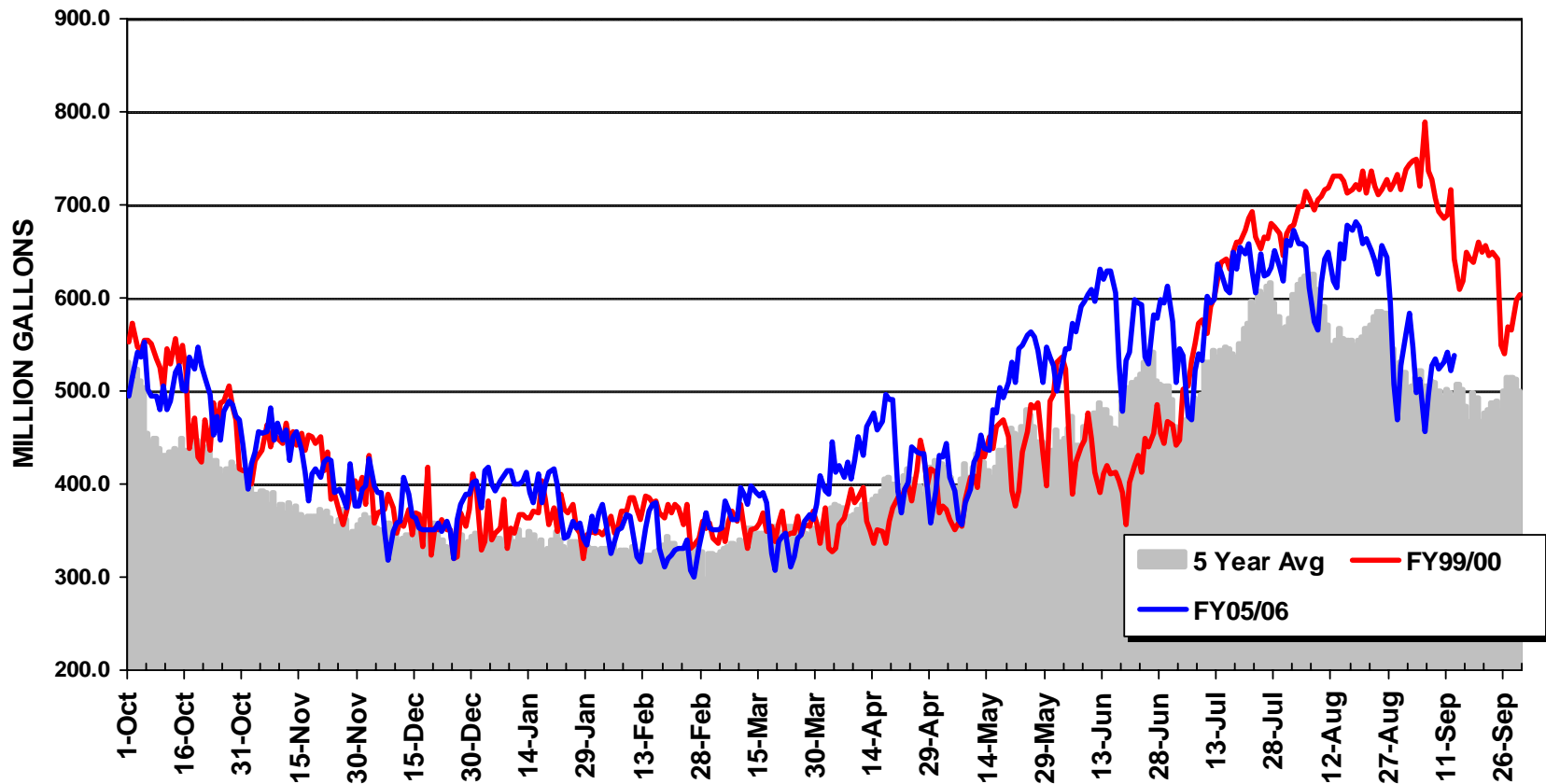


Context of Drought

- Dallas area drought of record (1950s) lasted 7 years
- Current drought began in April 2005
- Our total connected water supplies are currently approximately 32% depleted (17 months later)
- Dallas' water supply has been planned to provide water throughout the 7 year drought of record
- Impact of current drought on water supply lakes is estimated by:
 - Current lake levels
 - Demand assumptions
 - Superimposing the weather from the 1950s on the current drought

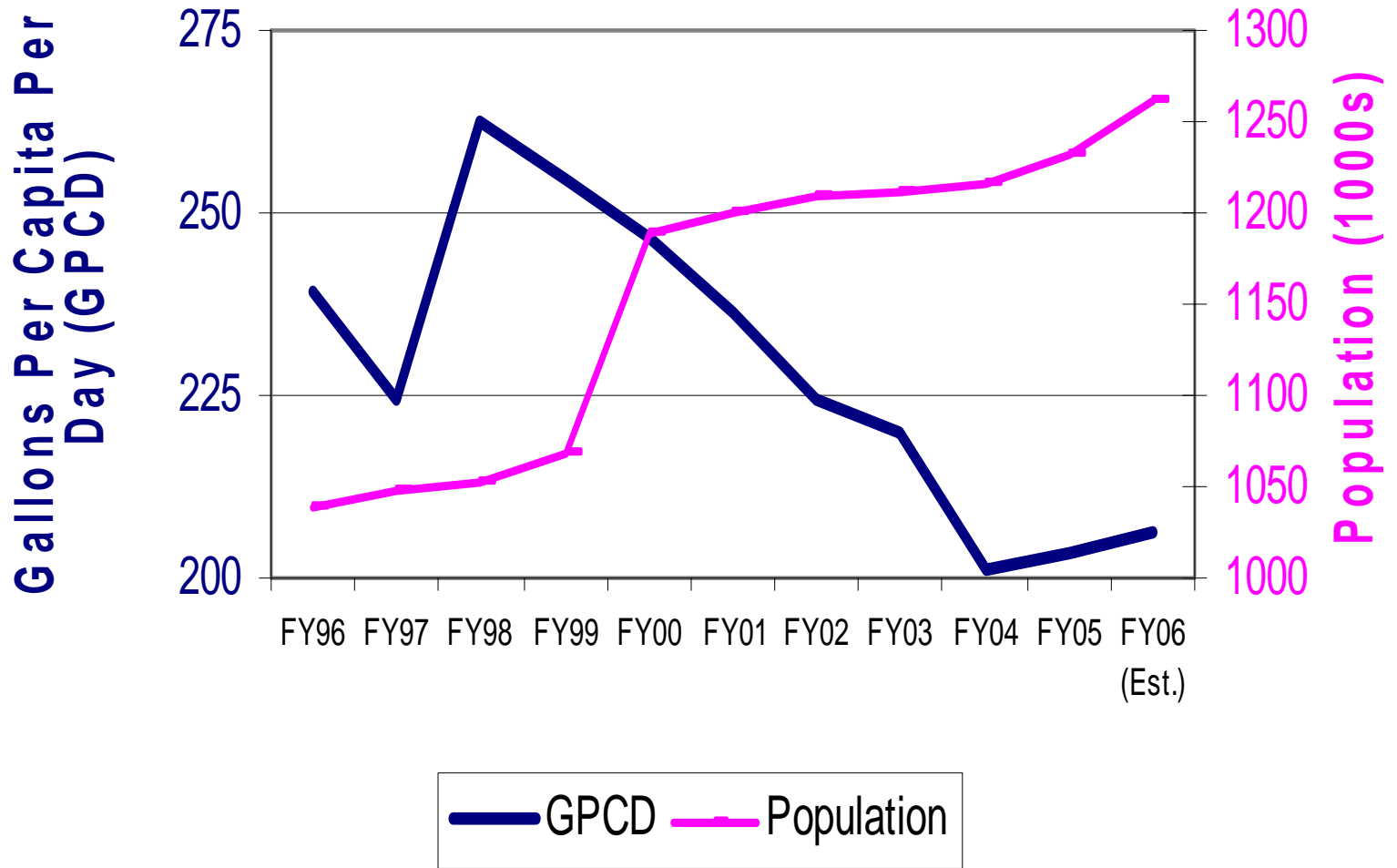
Dallas Water Utilities System

Daily Water Consumption (FY00 and FY06)



Dallas' overall consumption in FY 2006 with a higher population as compared to the 2000 drought is almost identical at approximately 170 billion gallons for the year.

Annual GPCD and Population

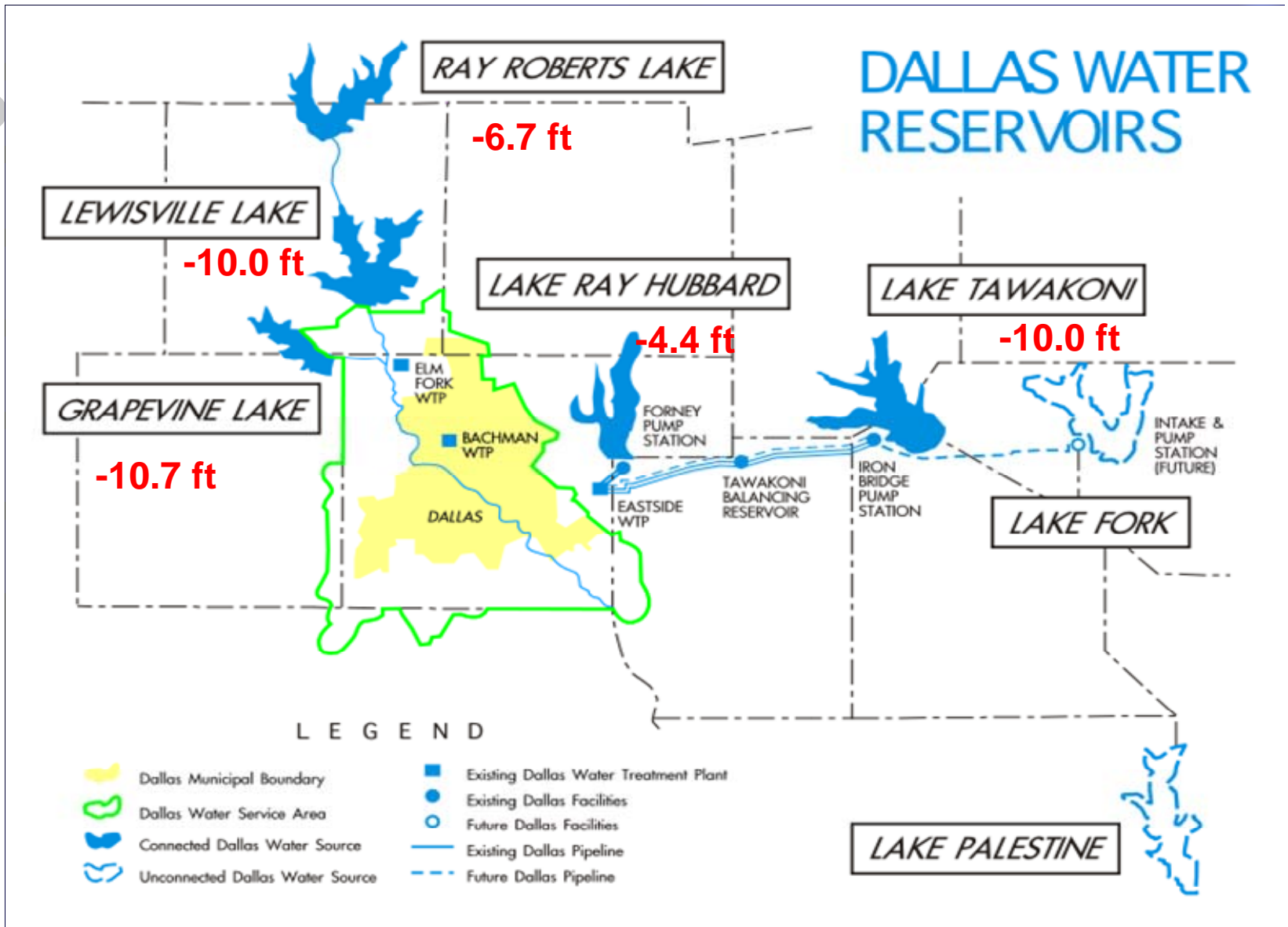


Conservation measures adopted by the Council In Oct 2001 have been positive, allowing Dallas to mitigate the impact of drought weather conditions on water supply.



System Operating Guidelines

- Dallas operates its reservoirs to maximize water availability
- Guidelines are utilized to ensure water is available throughout a drought of record
- Use of reservoirs is shifted from “west to east” during drought to minimize losses due to evaporation and water rights considerations



Overall Depletion: 32% as of 9/13/06

Western lakes (Ray Roberts, Lewisville, Grapevine): 33% depleted

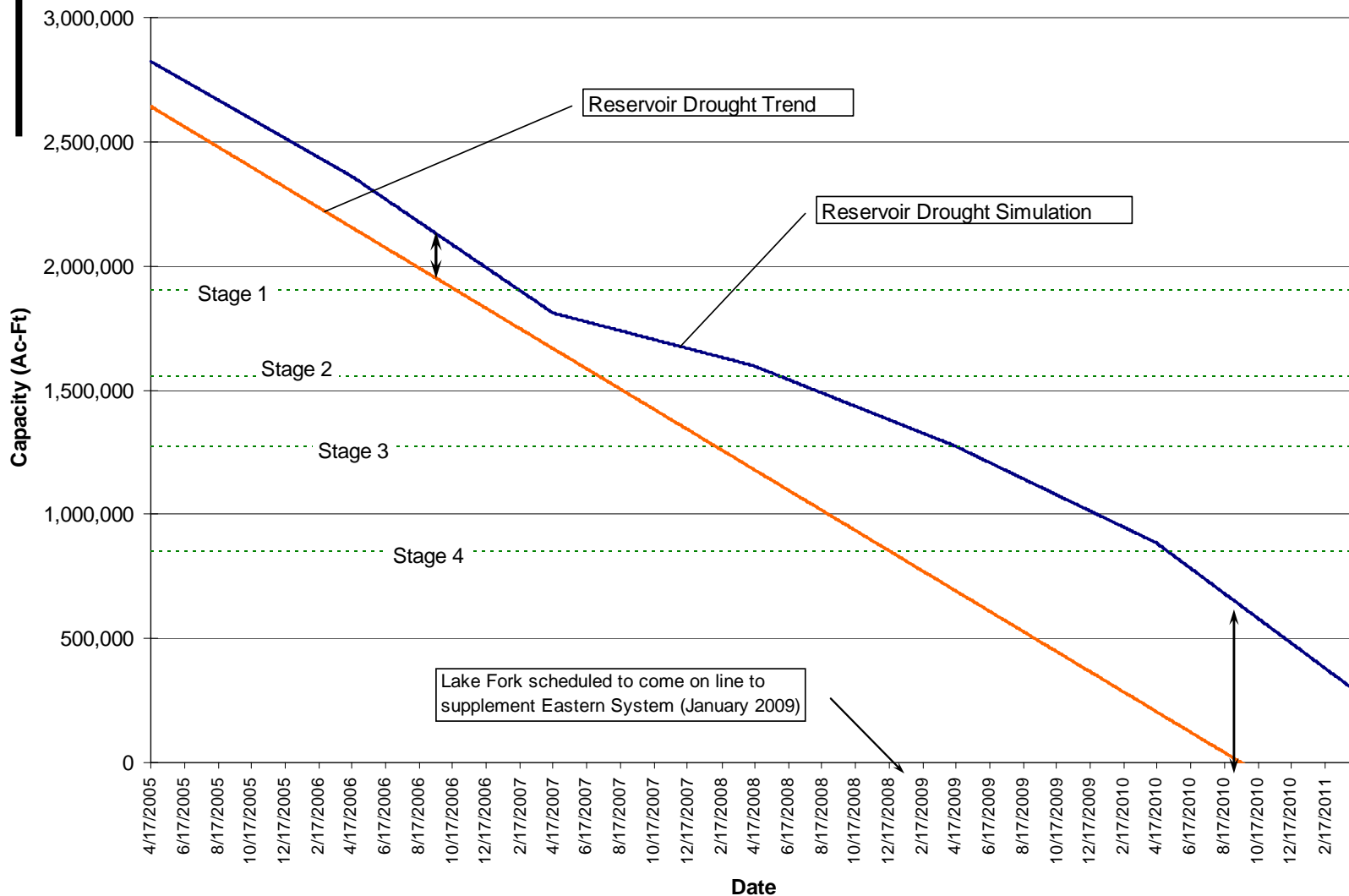
Eastern lakes (Ray Hubbard, Tawakoni): 31% depleted



Near-term Capital Improvements & Enhancements

- Will connect an additional water supply reservoir (Lake Fork) to the Dallas Water Supply System in January 2009
 - Awarded \$150 million in capital improvements to construct a pipeline and pump station to connect Lake Fork to Dallas's system
- Provides an additional 100 MGD of water to Dallas' system

Dallas Water Supply System Connected Reservoirs Lewisville, Ray Roberts, Grapevine, Ray Hubbard, and Tawakoni



Initiation of drought responses earlier helps to minimize additional restrictions in future years.



Reservoir Levels Outlook

- Since April 2005, rainfall is 15-19 inches below normal
- Under current conditions, it is projected that Stage 1, Water Awareness Level (35% depleted), will occur in October 2006
 - May recommend that additional actions be implemented under Stage 1
- Depending on future demand and weather conditions, additional stages could occur after the end of the calendar year



Other Responses for Consideration

- New or Expanded Conservation Measures
 - Extension of time of day watering from April 1 to October 31
 - Currently June 1 – September 30
 - Time of day helps with evaporation losses
 - Not considering year-round due to freeze concerns and reduced evaporation losses
 - Request restaurants post signs that water is served only on request (voluntary)
 - Have hotels/motels post signs suggesting that patrons reuse linens (voluntary)
- Drought Measure (Stage 2)
 - Early implementation of twice a week watering on Wed/Sat and Thurs/Sun depending on street address



Selected Voluntary Actions for Stage 1

Stage 1 Water Awareness

Encourage reduction in:

- ✓ Frequency of watering new landscaping and foundations
- ✓ Frequency of washing & rinsing vehicles, hand-held hose or commercial car wash
- ✓ Frequency in draining and refilling swimming pools
- ✓ Frequency of recreational use including use of faucets, hoses or hydrants
- ✓ Water use through voluntary day of week watering schedule
- ✓ High volume water users through water use audits
- ✓ Landscape uses for parks and golf courses
- ✓ Encourage implementation of like procedures by wholesale water customers



Selected Actions for Stage 2

Stage 2 Voluntary	Stage 2 Mandatory
<p>Encourage further reductions by:</p> <ul style="list-style-type: none">✓ Additional reductions in draining and filling swimming pools✓ Identifying and further encouraging voluntary reduction measures for high volume water users through water use audits✓ Encourage implementation of like procedures by wholesale water customers	<p>Restrict operation of ornamental fountains or ponds to initial filling</p> <ul style="list-style-type: none">✓ Prohibit recreational water use including use of faucets, hoses or hydrants✓ Restrict washing of any motor vehicle to the use of hand-held bucket or commercial car wash✓ Prohibit hosing off paved areas, buildings, windows, etc.✓ Mandatory day of week landscape watering



Additional Actions

- Possibly use non-Code Compliance personnel to issue citations for water ordinance violations
- Additional measures enacted would coincide with ordinance changes
- May use department's public outreach budget to further educate public on drought related responses



Notification Procedures

- The City Manager is authorized to implement emergency measures and Drought Stages
- Notification is by public announcement and published in local newspaper
 - Duration of order is up to 60 days from date of publication
 - Termination of a Stage is through the same notification procedure
- The duration can be extended by the City Council in 120 day periods with same notification



Next Steps

- Seeking feedback from Council on additional drought related responses
- Staff will continue to actively monitor the current drought situation
- Staff will advise Council prior to the implementation of drought stages



Appendix

- Stage Reduction Targets
- Summary of Trigger Conditions
- Selection Actions for Stages 3-4
- Conservation Ordinance Highlights
- Public Websites



Stage Reduction Targets

STAGE	LEVEL	TARGET*	RESPONSES
1	Water Awareness	1 %	Voluntary Measures
2	Water Watch	5 %	Voluntary & Mandatory Measures
3	Water Warning	15 %	Mandatory Measures
4	Water Emergency	25 %	Mandatory Measures Water Allocation

*Reduction in gallons per capita per day

Summary of Trigger Conditions

Type of Water Management Condition	Stage 1 Water Awareness	Stage 2 Water Watch	Stage 3 Water Warning	Stage 4 Water Emergency
Water Supplies Are Low	Total raw water supply in connected lakes or the western or eastern reservoirs has dropped below 65% of City's share of the total conservation storage	Total raw water supply in connected lakes or the western or eastern reservoirs has dropped below 55% of City's share of the total conservation storage	Total raw water supply in connected lakes or the western or eastern reservoirs has dropped below 45% of City's share of the total conservation storage	Total raw water supply in connected lakes or the western or eastern reservoirs has dropped below 30% of City's share of the total conservation storage
Response	Voluntary reductions	Voluntary and Mandatory water use reductions	Mandatory water use reductions.	Mandatory water use reductions; water allocation



Selected Mandatory Actions for Stages 3 and 4

<p style="text-align: center;">Stage 3 Water Warning</p>	<p style="text-align: center;">Stage 4 Water Emergency</p>
<ul style="list-style-type: none"> ✓ Irrigation of landscaped areas limited to day of week and time of day watering ✓ Hose-end sprinklers and permanent automatic sprinkler systems prohibited ✓ Filling, refilling or adding to pools is prohibited ✓ Operation of any ornamental fountain or pool prohibited ✓ Permitting of new swimming pools prohibited ✓ 10% rate increase for water use over 10,000 gallons ✓ Golf course greens & tees watered in off peak hours ✓ Require contractual water demand restrictions of wholesale water customers 	<ul style="list-style-type: none"> ✓ Irrigation of landscaped areas is prohibited ✓ Water to wash any motor vehicle, boat, etc. is prohibited ✓ City may impose a retail water rate increase to discourage water use ✓ All stage 2, 3 and 4 requirements remain in effect for City Government, commercial customers and wholesale customers ✓ Director is authorized to initiate allocation of water supplies on a pro rata basis in accordance with Texas Water Code



Conservation Ordinance Highlights

- Ordinance adopted by Dallas City Council in October 2001
- No irrigation from 10 am to 6 pm from June 1 through September 30 except for hand watering and soaker hoses
- Do not allow sprinkler systems to water driveways, sidewalks and streets
- Do not allow water to runoff onto a street or other drainage area
- Maintain Sprinkler Systems
 - Repair any broken, missing or misdirected sprinkler heads
- Install rain and freeze sensing devices on sprinkler systems
 - All automatic sprinkler systems required to have these devices
- Do not water during any form of precipitation
- Hand water or use a soaker hose
 - Permitted any time



Public Education & Outreach Website Details

- Website Updates
 - www.dallascityhall.com
 - Prominent link in “Highlights” section on drought information
 - Drought contingency plan information on 1 page user-friendly flyers highlighting stages and responses
 - Current lake levels
 - Frequently asked questions
 - www.savedallaswater.com
 - Drought contingency plan information on 1 page user-friendly flyers highlighting stages and responses
 - Current lake levels
 - Water conservation indoor and outdoor tips
 - Related links for drought information/education
 - www.cod
 - Stages and responses
 - Current lake levels
 - Frequently asked questions
 - Information on training sessions
 - Used to provide prompt and current information to city employees as conditions improve or worsen