



STAFF REPORT

TO: Butte County Board of Supervisors

FROM: Paul Gosselin, Director
Water and Resource Conservation

SUBJECT: Drought Task Force 2008 Status Report and Findings

DATE: January 12, 2009

Introduction and Background

California is experiencing drought conditions after two years of low precipitation, very little snowmelt runoff, a historically dry spring in 2008 and the largest court-ordered water transfer restrictions in state history. On June 4th, the Governor formally declared a statewide drought and took administrative actions to promote conservation, promote moving water to critical areas, increase fire protection and assess impacts to communities and agriculture. Although Butte County may be experiencing lesser effects of the drought than other parts of the state, and current drought conditions do not pose an imminent risk, the situation warrants consideration of early action measures consistent with the Drought Preparedness and Mitigation Plan.

The Butte County Drought Preparedness and Mitigation Plan was adopted by the Board of Supervisors in 2005 by way of Resolution 04-200. A key element of the Plan was the creation of the Drought Task Force (DTF). The DTF is chaired by the Director of the Department of Water and Resource Conservation and includes one representative from the Butte County Departments of Emergency Services, Public Works, Administration, Agricultural Commissioner, Environmental Health as well as the Chair of the Water Commission. In addition to those Departments, the DTF includes representatives from the Butte Basin Water User's Association, the UC Cooperative Extension/Butte County Farm Advisor, California Department of Forestry and Fire Protection/Butte County Fire, Natural Resource Conservation Service and the Butte County Resource Conservation District.

The charge of the Drought Task Force is to monitor hydrologic conditions throughout the water year and report the findings to the Water Commission and the Board of Supervisors annually in non-drought situations, and biannually, quarterly, or monthly as a drought progresses. During all phases of a drought emergency, the DTF will collect data on snow-pack, reservoir levels, stream flow, precipitation, and temperatures. Reports to the Water Commission are to include information on drought forecasts and climate conditions; projections based on snow-pack and precipitation, stream flow, reservoir levels, groundwater levels; requirements for the routine as well as special reports; and identification of information gaps and resources to address them.

Every drought poses its unique challenges, but the complexity of the current one we are experiencing will require sound planning, coordination and information. Since we may be at just the beginning of a prolonged drought cycle, having factual information on the impacts of the drought will be critical to our planning efforts and will guide an appropriate response.

The sequence of actions for a drought cycle, as outlined in the Drought Preparedness Plan, will be rolled out in three phases. The first three years will be defined as Phase I, and monitoring and reporting efforts will be overseen by the DTF. In years 4-6, or at the earlier recommendation of the Task Force, Phase II efforts will begin. Phase II efforts include the convening of an Interagency Coordination Group (ICG), and assessing drought impacts, initiating general actions to respond to impacts, activating specialized working groups as necessary and serving as the primary liaison with appropriate local, State and federal agencies. This group will be comprised of the Chair of the Board of Supervisors, the Chief Administrative Officer, DTF Members, President of the Butte County Farm Bureau, Executive Director of Private Industry Council, Executive Director of Butte Environmental Council, and a designated representative from Butte County Sheriff, the California Department of Water Resources (CA DWR), and the California Department of Fish and Game. The ICG can activate specialized working groups as needed to coordinate the assessment of drought impacts, as well as appropriate response and mitigation actions. The ICG shall act as the lead agency for drought response and mitigation. Phase III begins after year six of a continuous drought cycle.

The following is a summary of the drought related issues from 2008, potential issues and recommendations for 2009.

Findings of 2008 Drought Conditions

The DTF met on June 18, August 28 and December 11, 2008 to review the 2008 water year index, the most current groundwater monitoring data, reservoir levels, and to assess the overall drought impacts at the state and local levels. The documents presented to the group are posted on the Department website http://www.buttecounty.net/waterandresource/drought_info.htm.

Drought Forecast and Climate Conditions

In 2008, the snow-pack and precipitation began to meet normal annual levels. However, the effect of a historic dry spring severely reduced the annual runoff.

Reservoir Levels

Lake Oroville experienced its lowest carryover volume since 1977, and preliminary reports indicate that the 2009 water year will likely be dry and, in order for reservoir levels to recover, the state would need to receive 95% of average precipitation next year.

Groundwater Levels

The Department of Water and Resource Conservation works cooperatively with the DWR to take groundwater level measurements in selected wells throughout the County four times a year as part of our ongoing data collection program. The annual Groundwater Status Report is published each February and contains data summarizing groundwater level and land subsidence data collected by Butte County and DWR up to and through October of the previous year. When comparisons were made between 2007 and 2008 measurements, on average, there was a greater level decrease in wells drilled to the 200-600' range versus wells that were in more shallow or deeper zones. While Butte County did see a greater number of wells with declining levels, it is not yet being impacted to the degree that surrounding counties have been.

The DTF received reports of some of the direct and indirect consequences of the current drought situation:

- **Agricultural Damage** - Butte County ranchers faced an economic impact of over \$1.0 million due to loss of grazing land. A declaration of emergency was issued in the spring and summer of 2008. On September 16, 2008, the U.S. Department of Agriculture designated 11 counties in California as primary natural disaster areas. The following counties in California were designated as primary natural disaster areas because of losses caused by drought that occurred during the period of Jan. 1, 2008, and continuing. Those counties are: Butte, El Dorado, Glenn, Humboldt, Mendocino, Napa, Nevada, Solano, Tehama, Tuolumne and Yolo.
- **Well Impacts from Declining Groundwater Elevations** – The department solicited information on well impacts due to the drought from well drillers, the Butte County Department of Public Health - Environmental Health Division, UC Cooperative Extension Service and the Department of Water Resources.
 - Well pumps became less efficient due to the increased burden of lifting water from greater depths and this increases irrigation times in order to apply the necessary amount of water.

- Increased power costs associated with that greater lift.
 - Soil Moisture Deficit - If a landowner was initially unaware of an underperforming well, insufficient irrigation contributed to the soil profiles in some orchards becoming extremely dry. A deficit in orchard irrigation in the post-harvest period this year will decrease next year's yields. Additionally walnuts require adequate soil saturation to prevent frost damage.
 - Increased necessity to deepen well casings or replace pumps.
 - Abnormal Well Reports – Butte County solicited information from the public to report abnormal well operation. The solicitation generated reports from throughout the county from owners of residential private wells reporting problems and concerns.
- **Fire Complexes** - The dry spring contributed to the magnitude and extent of the fire complexes in 2008. In response to concerns about handling trees that were scorched in the recent Butte County lightning complex fires, we identified information to assess fire damaged oaks and whether or not they are healthy or hazardous. This information can be viewed through the UC Cooperative Extension website at: http://cebutte.ucdavis.edu/Agriculture_and_Natural_Resources/Burned_Oak_Information.htm.
 - **Land use changes** - In the last five years, there have been significant land use changes not only in Butte County, but in the surrounding counties. This includes conversion of agricultural lands to urban use, conversion of crop types (e.g., annual to permanent), as well as putting significantly more amounts of open space land into agricultural production, with the proposal for more in the next few years. These land use changes could have unintended impacts on neighbors with long standing irrigation practices who are now paying more in energy costs to lift water due to the increased demand on the resource during normal and critical water years.
 - **Urban Water** – Agencies that supply water to communities (e.g, Cal Water, Paradise Irrigation District) have instituted actions consistent with their Urban Water Management Plans. At this stage, they are continuing to educate the public on conservation efforts to reduce water demands. Cal Water is required by law to install water meters for all customers by 2025, and in addition to that conversion process has instituted a tiered water rate system to encourage water conservation.
 - **Stream Flows** – The unusually dry spring resulted in reduced stream flows in some streams. However, some streams such as Butte Creek are required to maintain certain flow levels to protect species.

- **Basin Management Objective Alert Levels** – Butte County will submit its fourth Basin Management Objective (BMO) document to the Board of Supervisors in April 2009. This report establishes monitoring protocol and Alert Stages for groundwater elevations, groundwater quality, and subsidence in each of the sixteen sub-inventory units. Alert Stages were reached after spring and fall groundwater level measurements were taken, and after sufficient technical review, it was determined that the noncompliance was directly resultant of inadequate precipitation.

Findings of Potential Drought Issues for 2009

- **Increase Utilization of Groundwater** - The drought conditions will lead to an increased utilization of groundwater. There are a number of reasons why increased utilization of groundwater would occur during drought conditions:

Winter Irrigation – The lack of precipitation during the fall and winter of 2008 forced many orchardists to have to conduct winter irrigation in order to saturate the soil to a sufficient depth to prepare for the upcoming growing season.

Surface Water Cutbacks - There is a probability that there will be cutbacks in State Water Project (SWP) surface water deliveries to the Western Canal Water District (WCWD) and the Joint Water Districts (JWD). The settlement contracts between WCWD/JWD and CA DWR specify that cutbacks cannot exceed 50% of the settlement delivery in any given year and not more than a total of 100% over a 7 year period. The result of a 50% cutback would amount to roughly 300,000 to 400,000 acre feet. The Department conducted a groundwater model scenario that outlines impacts and recoveries within the basin from just such a scenario. http://www.buttecounty.net/waterandresource/gw_model_update.htm

Well Impacts – The increased utilization of groundwater and the decline in groundwater elevations from a lack of precipitation could potentially lead to problems for specific wells. Of special concern are wells drilled to shallow depths, typically used for domestic supply. The Department will be encouraging the public to work with staff to learn more about well construction and operating functions. Additionally, the Department will be compiling data to determine areas that may be most vulnerable to well difficulties and will target outreach efforts to those areas.

- **2009 Drought Water Bank** - The state is developing a Drought Water Bank to address water supply shortages in some parts of the state. The Drought Water Bank includes groundwater substitution programs, land fallowing and crop substitution. Any program that involves a groundwater substitution program in Butte County will be required to comply with Chapter 33. Entities that participate

in the Drought Water Bank by fallowing or by crop substitution are not applicable to Chapter 33.

- **Basin Management Objective Alert Levels** – As mentioned above, Butte County will submit its fourth BMO document in April 2009. Currently, many of the BMO sub-inventory units rely on averages of historic groundwater levels to establish their Alert Stages. Noncompliance with BMO levels are expected to continue in 2009, causing some of the sub-inventory units to reach a Stage 3 Alert. The unusual nature of the current drought is creating a conflict with the established BMO process and the expectation for resolving non-compliances. The BMO process was set up to establish Alert Stages as a protection from overdraft within the sub-inventory unit due to injurious local groundwater activities. At this time, no provision exists for resolving BMO non-compliances in the event of a drought period, and therefore staff and the sub-inventory representatives will continue to rely on guidance from the Technical Advisory Committee to adequately report drought impacts to stakeholders. The primary response for sub-inventory units will be to promote water conservation measures and voluntary coordination of groundwater pumping. As mentioned in the recommendations section, a related action on electric rates may be necessary.
- **Urban Water** – If the drought continues into 2009 some of the urban water purveyors may move to a higher level of drought response and may institute mandatory conservation measures. The Department will be working with urban water purveyors and municipalities on drought planning and response efforts.
- **Economic Impacts** – In 2008, various sectors of Butte County experienced economic impacts from the drought including loss of feed on grazing land, increased costs for pumping groundwater, retrofitting (lowering) existing wells, installation of additional new wells to meet demand, and orchard crop stress. We can expect that additional economic impacts will occur in 2009 from crop stress, continued well installations and/or retrofits, increased energy costs and land fallowing.

Early Action Recommendations

As we enter into the second year of the drought, the overarching recommendation by the Drought Task Force is that Butte County prepares for the eventual transition to a Phase 2 drought response by initiating specific actions from Section 4, Drought Response and Mitigation. This section focuses on response and mitigation efforts for urban, agricultural, environmental water uses, the specialized needs of remote communities, and potential help with statewide drought supply. The drought response actions that should be initiated include:

1. Increase Conservation Measures – Butte County should continue to partner with the University of California Cooperative Extension, CSU Chico, urban water

purveyors, NRCS, Butte County RCD and others to promote adoption of water conservation measures.

2. Coordinate education and outreach on the drought and potential impacts – Butte County and the members of the Drought Task Force should develop specific outreach messages regarding the drought and reasonable steps people could take.
3. Gather Data on the Drought
 - a. Butte County should find a suitable partner (e.g., CSU Chico) to prepare a report on the economic impacts to agricultural economy from the drought.
 - b. Gather well data (retrofit/installation) from the Division of Environmental Health and the California Department of Water Resources.
 - c. Conduct additional assessments on groundwater impacts from a multi-year drought.
4. Seek State/Federal Drought Assistance – As a follow up to the data gathering on economic impacts, the Butte County should work with the agricultural industry and be prepared to request state/federal drought assistance.
5. Initiate efforts to provide flexibility for well operations
 - a. Promote modifications to Pacific Gas and Electric rates – The PG&E rate schedule for agriculture is lowest during off-peak periods, particularly weekends. Given the economic challenges facing agriculture, the PG&E rate structure forces many growers to pump during a limited period. This situation may pose interference problems for wells located within close proximity on a single or adjoining parcel, and preclude any meaningful opportunities for local coordination. The County should initiate discussions with PG&E and the agricultural industry on options to temporarily re-structure the agricultural rates during the drought.
 - b. Promote adoption of solar energy for wells – The County should continue to work with the Natural Resource Conservation Service, the Resource Conservation District and the agricultural industry to seek funding opportunities for solar powered wells.