

MUNICIPAL AND INDUSTRIAL WORKING GROUP – *DRAFT*

KEY POINTS

- A workable plan for handling drought emergencies is essential, whether it is stand-alone or part of an overall disaster preparedness and response plan. Plans should be a product of the logical areas they cover, such as watersheds, groups of States, regions within a State, and/or the individual entities responsible for water management. The Federal role should be primarily coordination and technical assistance.
- Due to the sporadic nature of droughts, new Federal programs specifically oriented toward mitigation of and recovery from drought impacts would not be desirable. However, without such programs, it must be recognized that requests for assistance for drought purposes under existing programs will often have to compete with non-drought related requests, which may already exceed available funds.
- Plans should recognize and accommodate the needs of small water systems and small businesses, in addition to families and individuals, which may all be disproportionately affected by drought impacts because their resources are limited.
- Ensuring the availability of safe drinking water, which is essential to human survival, must be the top priority, even if stringent conservation measures are required in other use categories. Allocation of water among other use categories should be as balanced as possible based on the particular circumstances involved.

RESPONSE TO THE 8 ITEMS

1. Determine, in consultation with the National Drought Mitigation Center in Lincoln, Nebraska, and other appropriate entities, what needs exist on the Federal, State, local, and tribal levels to prepare for and respond to drought emergencies.

The most critical need is to ensure the availability of adequate quantities of safe drinking water. The needs of other water using sectors often conflict during water shortages. Severe droughts exacerbate tensions between the municipal and industrial, wastewater, hydropower and waterborne transportation sectors, between these and other consumptive uses, such as agriculture, and between these sectors and environmental water requirements. Small businesses may experience loss of vital cash flow as a result of drought, due to a loss of customers directly due to drought conditions, such as

a water recreation business dependent on water flow. Likewise, they may experience economic losses indirectly because customers lose buying power, such as a non-agricultural business (grocery stores, gas stations, etc.) in a heavily agricultural community. In both cases, the business may experience a lack of working capital to meet business or personal expenses. However, the California droughts from 1987-1992 exemplified what is often true, which is that measurable drought impacts in the M & I sectors are often small in comparison to the social and political friction created by the anticipation of more severe impacts. The anticipation may be of impacts directly from the drought or indirectly from legal remedies applied during the "crisis".

Stakeholders in these sectors require thorough planning to identify the parties involved, possible impacts of water shortages, a thorough inventory of water supply and demand, statutory and other requirements, and any limiting factors. As of June 1999, more than a third of the 48 States did not have a formal drought plan according to the National Drought Mitigation Center. The best time to prepare for drought emergencies and how to respond to them is during non-drought periods. Unfortunately, when there is no drought, water users place a low priority on drought preparation; when a drought does occur, increased competition for water within and between sectors and regions often inhibits collaborative solutions.

A final note, what some call a need, others might call an unreasonable expectation. In some cases drought conditions may become the norm for a fairly long period of time. From a societal perspective, it may not be realistic or desirable for some businesses to survive in their current form over the long term as a result of long-term drought conditions. Business owners may need assistance in planning, financing, and executing the transition to a more viable activity.

2. Review all existing Federal laws and programs relating to drought.

Based on information assembled by the working groups, there are over 70 Federal programs which could conceivably be utilized in preparing for or responding to a drought situation. These programs are identified and briefly described in Appendix nnn.

As the descriptions show, however, most of these relate to very specific areas or activities, particularly agricultural production, or to only a small proportion of the groups which are, or can be, affected by a drought. Most also are oriented toward responding to the impacts of a drought or other disaster such as a flood or hurricane; in many cases, a disaster must actually be declared to create eligibility for the program. Only a very small number of the programs have preparation for a disaster as a primary or even major purpose. Those include the Resource Conservation and Development Program provided by USDA, the Planning Assistance to States program provided by the U.S. Army Corps of Engineers, and the Mitigation Assistance Program provided by the Federal Emergency Management Agency.

3. Review State, local, tribal laws and programs relating to drought that the Commission finds pertinent.

State, local, and tribal laws and programs relating to drought should be further evaluated once a more complete evaluation has been made of Federal laws and programs. Some information on state laws is presented below.

State:

Each State has a Drinking Water State Revolving Fund Program that loans money to municipalities to build drinking water infrastructure to meet the requirements of the Safe Drinking Water Act. Most States have included in their Intended Use Plan a provision for funding projects on an emergency basis if the project is on the priority list. The emergency conditions are determined by each State and may include drought.

Similarly, each State has a Clean Water State Revolving Fund Program from which qualifying applicants (states, communities, citizen groups, individuals, non-profits) can borrow to fund various structural and non-structural wastewater projects. These include reclamation/reuse facilities, agricultural runoff control, estuary restoration, and limited water conservation measures. Project eligibility is at the discretion of the State.

At least 15 States and one regional authority (Delaware River Basin Commission) have a water conservation planning requirement for water systems in conjunction with a funding or permit program. A recent survey showed that only 17 of the 42 responding States required water systems to prepare a drought contingency plan.

State water law generally governs the allocation and permitting of water supply. States have modified their laws to better prepare for and respond to drought. During the National Drought Study, the Corps identified the following six key insights into the way state water law is being adapted to help manage drought:

a. Site specific programs are more practical than generic sweeping changes in the law. The trend of water law both in the East and the West is to apply new, improved approaches to specific geographic areas, where problems are sufficiently obvious to warrant political action. In Virginia, recent statutes allow the State Water Control Board to designate management areas within which restrictions may be imposed to meet emergency conditions. Indiana, North Carolina, South Carolina and New Jersey allow restrictions on groundwater use in specific areas. In the west, the Arizona Groundwater Management Act establishes special use restrictions in certain areas.

b. Unquantified water rights can be a problem or an opportunity. Some western states are taking steps to adjudicate existing water rights in order to determine how much water is really needed. A large source of uncertainty regarding water use comes from unquantified claims of the Indian tribes and certain Federal reservations. Water managers should push for flexibility of water use where needed during drought, without waiting for complete adjudication. In some cases, the threat of a court fight to quantify

water rights can be used constructively to encourage negotiated water allocations during droughts.

c. **Public Trust Doctrine and Instream Flows.** The full extent of the public interest in water is not always recognized by water allocation decisions. The public trust doctrine holds that the sovereign retains control of the water resource to serve public trust purposes, which may include recreation and ecological values. As of 1994, the public trust doctrine was explicitly recognized in some form in nine eastern and western states. In California, a court decision requires California water managers to take the public trust into account in planning and managing water resources. As a practical matter, any drought management plan must include consideration of the instream values of water, in order to avoid a challenge based upon the public trust doctrine. In most states, instream flows are, to some extent, explicitly protected. A 1989 survey listed eight western states with instream flow laws, and four that protect instream flows by means other than allocation. In the East, many states have authorized agencies to establish minimum stream flows or water levels. Instream flows are often an important factor in drought management planning, particularly as the drought intensifies.

d. **Legal disincentives to water conservation and water transfers** are being addressed, but there are still problems. The "pure" prior appropriations doctrine requires that water be diverted for beneficial use. "Beneficial" is defined a little differently in different states, but it always refers to categories of use; for example, irrigation is a beneficial use, no matter how inefficiently the water is applied or how low the value of the crop. Beneficial in this context does not mean that the use has great economic value or high social importance. Water conservation can reduce the amount of water used beneficially, and thus can reduce the right. Recognizing this can be a disincentive to the best use of a limited resource, a few western states have passed laws that favor water conservation by use of water salvage, water marketing or water banking. But these efforts are not settled. For example, the Supreme Court of Arizona recently ruled that most of a 1995 law that made it easier for landowners to preserve their right even as they reduced use through conservation was unconstitutional. One practical consequence is that the city of Scottsdale, which bought a ranch to get the water rights, reportedly will now have to continue to irrigate alfalfa fields on the ranch to preserve the right to use the water for M&I water supply.

e. **Legal prohibitions against trans-basin diversions** may or may not be in the regional or national interest. We raise this issue for the Commission's awareness although we know of no case where the transfer would occur if only a legal restriction were relaxed. We believe most transfers would be controversial because the impacts and benefits can both be substantial. There can be formidable environmental arguments against transfers, such as the potential harm from the introduction of non-native species to the recipient basin, but the ability to make inter-basin transfers during drought can increase water supply reliability without having to build additional reservoir storage. Nevertheless, diversions have been allowed in the East and some western states have created restrictions to protect the interests of the basin of origin despite the fact that fundamental appropriation doctrine allows such diversions and fundamental riparian law

does not. A legal restriction against transfers stifles attempts to design a transfer that addresses the concerns of lawmakers.

f. Changes in groundwater law and conjunctive use management offer a long range promise for reducing drought impacts. In most states, allocation of ground water is handled differently from that of surface water. In some states there is no provision at all for state allocation of ground water. This situation complicates the preparation of drought contingency plans, which, in principle, should provide for most effective use of ground and surface water combined. Only two states in the East have expressly provided for surface and ground water resources to be managed as a single system. Arizona has a broad-based centralized program of ground water management which was devised to meet a chronic and continuing ground water shortage. New Mexico has a system of prior appropriation for ground water resources. The main development of conjunctive use management in the west has been on an incremental, site-specific basis, rather than a statewide program.

4. Determine what differences exist between the needs of those affected by drought and the Federal laws and programs designed to mitigate the impacts of and respond to drought.

The impacts of drought are often far-reaching, going well beyond the immediate impact on those directly affected by a shortage of water. Crop yield reduction or failure directly affects farmers, but may also affect livestock producers, equipment suppliers, and others. Federal laws and programs designed to mitigate the impacts of and respond to drought, however, are often oriented toward those who are directly affected. In addition, the laws and programs also tend to be oriented more toward responding to droughts than to preparing for them.

Those affected by drought impacts tend to consider their needs to be a very high priority. Those needs are often met, however, through programs that address ongoing needs that are not emergency in nature. Thus, at the Federal level, drought-related needs must be balanced with other needs that may affect far more of the population or country.

Federal laws and programs that mitigate drought impacts can be organized by temporal perspective into three categories: strategic, tactical and emergency.

Strategic preparedness includes construction of supply systems, navigation improvements, legislation to protect groundwater, or laws affecting long term water conservation. These measures take years to enact and can reduce the frequency and severity of future water shortages during drought for the next several decades.

Many existing Federal, State, local and Tribal laws are deficient in terms of substance or coverage in many areas, including the protection/management of groundwater, facilitation of water recycling/reuse, requirement for water supplier drought contingency

plans. The Federal government could play an increased role in the research and development of water reclamation/reuse and desalination to make "drought-proof" supply sources more available.

Municipal and industrial water supply is primarily a local responsibility, but the Federal government can play a significant supporting role in strategic preparations for drought. The Corps of Engineers must approve the construction of all new surface water reservoirs. The Corps and the Bureau of Reclamation may use their own reservoirs to store water for municipal use. These programs can be frustratingly slow to accommodate to new water use patterns, partly because affected parties contest the changes, but partly because state of the art planning methods are not used to find the best plan and resolve disputes.

Wastewater treatment plants typically discharge organic material into rivers which consumes oxygen as it degrades. This waste must be diluted with sufficient quantities of river water to maintain dissolved oxygen concentrations capable of supporting fish. During droughts, this use of fresh water competes with some other uses, including municipal water supply, boating and swimming in reservoirs, hydropower, and irrigation. The reduction in Federal subsidies has slowed construction of wastewater treatment plants, which increases the biological oxygen demand and the requirements for dilution water.

Inland navigation through free flowing channels (that is, not controlled by locks and dams) can easily be affected by droughts because fairly high flows are required to maintain adequate depths. The consequence of shallower water is that navigation becomes more expensive as less and less cargo can be loaded into barges. Strategic planning can identify structural solutions (such as weirs which produce required depths with less flow) and non-structural solutions (such as changes in reservoir operations). However, the use of water from Corps reservoirs to maintain navigation flows at the expense of reservoir recreation is highly controversial in the Mississippi-Missouri and Apalachicola-Chattahoochee-Flint river basins. In the ACF, the states of Alabama, Florida and Georgia are using state of the practice planning methods and have formed an interstate compact to deal with these issues. But even in the ACF resolution is slow, not because of a lack in Federal programs or laws but because the demand for competing water uses changes over time. The new demands and new stakeholders take root and prosper during wetter years, but the old and the new demands cannot be met during a drought. Because drought plans are not periodically tested and exercised, it usually takes a drought for people to notice that they have overused their water supply.

Strategic planning for hydropower development is based on the "dependable" output available even during droughts, when hydropower production is generally at its lowest.

Tactical preparedness refers to drought response plans prepared well in advance of any specific drought. These plans can be developed in a few months to a few years, and should be exercised, tested, and updated periodically. In terms of the needs of

drinking water suppliers, some states may lack one or more of the following: an established emergency funding mechanism; a mitigation program that could include a requirement for a drought emergency plan, a water conservation requirement, the provision of technical assistance, and a State drought contingency plan. The National Drought Mitigation Center identifies some 27 States with a drought response plan. Only four States have or are developing a drought mitigation plan.

The Federal government has some expertise but limited funding to help municipalities develop tactical drought response plans. The Bureau of Reclamation received limited funding to establish drought mitigation centers throughout the U.S., and has led drought workshops throughout the U.S. in the last few years. The Bureau has not developed a drought plan with a municipality.

Although the reduction in power production during droughts is considered in the investment analysis before hydropower facilities are installed, in some cases it might make economic sense to revisit these assumptions and to change reservoir operating rules to increase hydropower production or reduce it even further during drought. This has to be considered on a case by case basis during the development of drought mitigation plans, but a national policy that encouraged better drought planning would help discover those cases.

Emergency response measures are constrained by the strategic and tactical planning that has taken place, but they also include *ad hoc* and time specific decisions made in response to the particular circumstances of an ongoing drought. Under a disaster declaration by the Secretary of Agriculture, SBA assistance is limited to those businesses, which have suffered economic injury as a direct result of the declared agricultural disaster. For example, an implement dealer who suffered economic injury because of farmers' inability to purchase implements due to the impact of drought damage to their agricultural operations could be eligible. Other needs may be addressed through the regular Business Loan programs.

5. Collaborate with the Western Drought Coordination Council and other appropriate entities in order to consider regional drought initiatives and the application of such initiatives at the national level.

Drought conditions and impacts vary considerably in different sections of the country. Knowledge developed in one area, whether a single state or a multi-state area, should be evaluated when dealing with droughts in other states or areas of the country. However, mitigation and response measures from one area may not be appropriate in another. Drought planning and responses should be monitored on a nationwide basis to determine when implementation on a national basis is appropriate. However, a national approach should not be considered if it would hinder or restrict programs or initiatives that have already been developed and are functioning effectively.

The Commission should give consideration to implementation of drought policy on a river basin or watershed basis. A partial framework is in place with the River Basin

Commissions. A good example of this approach in action is that of the Delaware River Basin Commission.

At least three regions have used the sort of drought exercises recommended by the National Drought Study team. They are:

- a. The Interstate Commission on the Potomac River Basin Commission holds an annual drought exercise to assure drought plans are up to date, and to train new staff to deal with events that may not occur for a decade. A meeting last month allowed new staff in several state and local agencies to learn about drought planning in the basin. As required by the regional water supply agreements signed in 1981, the agency heads commissioned an update of water use forecasts for Washington, D.C.
- b. The Seattle district of the Corps of Engineers uses a "shared vision model" to help resolve potential dispute in the management of releases from Howard Hansen Reservoir. The model was built with stakeholder participation, so there is a high degree of trust in its simulations.
- c. The Tarrant Regional Water District, Ft. Worth-Arlington, TX conducted a virtual drought two years ago. This was a collaborative effort using the Corps Section 22 Planning Assistance to States authority referenced in our "drought authorities".

In addition, the Huntington District of the Corps of Engineers led a successful drought study response to the 1988 drought in the Kanawha River Basin which will, it is believed, reduce impacts to the whitewater rafting industry by millions of dollars in future droughts, while also improving water quality. Additional details can be provided.

6. Make recommendations on how Federal drought laws and programs can be better integrated with ongoing State, local, and tribal programs into a comprehensive national policy to mitigate the impacts of and respond to drought emergencies without diminishing the rights of States to control water through State law and considering the need for protection of the environment.

Water is a resource that requires holistic or integrated management approaches to achieve optimum use. Such holistic approaches require that all aspects of water management be considered, including supply as well as demand management, conjunctive use of surface water and groundwater, water conservation, recycling and reuse, water quality, economics, environmental/ recreational aspects, public health, socio-cultural aspects, storage (surface and underground), pollution control, water marketing and transfers, public involvement, conflict resolution, sustainability, etc.

Transfers of water from willing sellers to willing buyers while protecting third party interests should be facilitated. In general, drought problems are site specific requiring specific local/regional solutions. Municipal and industrial water suppliers need to have an integrated water management plan that incorporates a drought mitigation plan, demand management programs, and a supply management program. They also need

an effective state/regional drought mitigation plan and supporting programs that are coordinated, in turn, with a coordinated federal policies and programs.

The Corps has demonstrated effective drought preparation techniques collectively referred to as "shared vision planning" in cases where M&I, navigation, hydropower, environmental uses, recreation, and wastewater dilution were factors. These methods stress collaborative planning, with plans tested in stakeholder-built computer simulations of future droughts. The methods are effective and relatively inexpensive, and provide a comprehensive remedy for the shortcomings of traditional drought mitigation efforts.

Drought response planning should be a component of an overall effort involving contingency planning for other potential emergencies as well, since there will likely be overlap. There should be increased emphasis on identifying resources which are available to State, local, and tribal governments to prepare for and respond to drought and other emergency situations and ensuring that those governments are aware of the resources. Federal laws and programs should be evaluated based on knowledge of programs at the State level or below, but should primarily reflect national priorities rather than accommodating those programs. For example, Federal programs should be based on consideration of conditions and needs on a broader scale. This may mean a national, multi-state, or watershed approach.

Drought policy should be implemented on a watershed basis because of the innate advantages of this approach and because of the growing trend toward watershed management in the U.S. The policy should integrate research, planning, management, and sustainable development. Principles of social equity, environmental protection, and participatory decision-making should be stressed in drought mitigation and response programs.

Integration is best achieved through testing in drought exercises or virtual droughts that allow stakeholders and agencies to understand what a drought will be like before it happens. If there are mismatches in authorities or services, or if water needs have increased or diversified, these problems can be identified and corrected before the drought occurs. This simple idea, taken for granted in fire drills and dress rehearsals, is still rare in drought preparedness, although each new drought brings new demands for legislation to mandate coordination.

7. Make recommendations on improving public awareness of the need for drought mitigation, and prevention; and response on developing a coordinated approach to drought mitigation, prevention, and response by governmental and nongovernmental entities, including academic, private, and nonprofit interests.

Public awareness is very important. It seems that when drought conditions are present, the public gets concerned and may even panic, but when water supplies are adequate, apathy sets in. The public sector interested in drought issues needs sufficient

resources to inform the public about drought prevention. Federal efforts should be coordinated by a single agency - not necessarily all done by a single agency, but coordinated.

Public awareness and support is critical for water suppliers to successfully implement drought mitigation, water conservation and supply management programs. Suppliers will have a major role in disseminating information through a variety of forums. The Federal government and States can assist by coordinating their information dissemination efforts or by making information available to suppliers.

Including the public in the decision-making process for drought planning is crucial to gaining public support. The public must have a voice in decisions impact them, such as water conservation or curtailment, balancing competing water needs, and economic development.

Our research on lessons learned from the California droughts from 1987-1992 showed that the general public generally responded well to calls for short term water use curtailment. Information on the drought was abundantly available. It may be the agencies themselves that need greater awareness, since they need to know much more about what to do, and need to know in advance of the drought. Because droughts may not occur for years, even decades, agency staff may have little experience with droughts and may not be aware of the vast amount of research and practical experience available. Again, drought exercises, like fire drills, let everyone practice their roles in preparation for the real thing.

8. Include a recommendation on whether all Federal drought preparation and response programs should be consolidated under one existing Federal agency and, if so, identify such agency.

Five options are offered for discussion:

a. **Central clearinghouse.** Because programs that address drought issues tend to be subsets of other established programs rather than freestanding drought programs, and because these programs are subject to different legislative, regulatory, and funding constraints, consolidation would not be practicable. A central clearinghouse with access to all disaster-related programs may be advisable.

b. **No change is needed.** Consolidation is really not essential as long as the various agencies work closely together to achieve optimum solutions. Municipal, industrial, and agricultural water users and environmental interests are all in the same (water) boat and must work together and compromise so that optimum solutions are achieved where probably nobody is happy but where at least dissatisfaction is uniformly distributed.

c. **Federal coordinator.** Many drought related programs are actually part of mainstream programs - particularly the Federal and State programs that finance

facilities and structures. Expertise is located in a myriad of agencies. Many experts in drought-related issues work on other issues as well. Therefore, we do not believe that all drought preparation and response programs should be consolidated under one agency. It would be advisable for one Federal agency to coordinate drought policy and preparation and response programs. Since agriculture is the largest water user, it would make sense for USDA to be the coordinator.

d. **Department of the Interior.** The Federal drought program in the 17 Western States should be consolidated under the Department of Interior. The drought program for the remaining States should be consolidated under the Department of Agriculture. All programs should be reoriented on a watershed basis.

e. **Virtual Teams.** The idea is appealing because of the hope that information and direction would be seamlessly integrated within one agency, but the arguments against forming a single agency are more convincing. First, attempts at agency reorganizations have often failed. Second, it has been our experience that it is easier and more effective to form virtual teams made up of representatives from the agencies in a region with power to help during droughts. Drought preparation and response efforts may draw upon a broad range of skills and knowledge - weather, agriculture, hydrology, water management, economics, public affairs, water treatment - that are unlikely to be found in one agency but can be borrowed from several. Virtual teams also have an easier time focusing on problems and solutions rather than process, since the teams are formed for an explicit purpose and are not subject to any one agency's protocol. Finally, the reality is that miscommunication and lack of coordination occur within agencies as well as between them. There are two caveats for the use of virtual teams. First, it is still useful to have a central point of contact for information. This may be nothing more than a website, or it may be a designated coordinating person or agency. Second, to assure accountability, virtual teams need a leader who will be held responsible for the success or failure of the team