



2015 Irrigation Association Drought Summit

Discussion Report and Recommendations

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Prepared by the Irrigation Association following the Nov. 13, 2015, IA Drought Summit

Preface

The scarcity of water resources during the recent western drought underscores the challenges confronting farmers and growers; federal, state and local policymakers; and the irrigation industry. With California entrenched in its fourth year of drought, the Irrigation Association, in partnership with industry sponsors, invited state, federal and irrigation industry leaders to discuss the current drought response at the 2015 Drought Summit in Long Beach, Calif., on Nov. 13, 2015.

The goal of the summit was to discuss and formulate policy and program recommendations that embrace irrigation technologies and management practices to maximize the benefits of managed landscapes and meet the growing global demands for agriculture with limited water resources. Irrigation is part of the solution and investments in efficient irrigation technologies will allow for increased water conservation during the current western drought and better preparation for future droughts.

This report summarizes the recommendations provided by speakers, panelists and summit attendees. Presentation topics included California's water shortage, groundwater sustainability and drought mitigation. In addition to presentations, expert panelists provided insight into the critical role that water-efficient technologies and investments in infrastructure and management practices play in the future of managed landscapes and irrigated agriculture. While the western drought was the focus of conversation, recommendations provided in this report can be applied at national and local levels.

Summaries of the presentations and panel discussions included in this report reflect the comments and perspectives of summit participants and were not developed by IA. The specific IA recommendations presented on page four of this report were developed in response to the discussions that took place at the 2015 Drought Summit.

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Acknowledgments of Summit Sponsors

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HydroKnot
OmniEnvironmental Group

Rain Bird Corporation
The Toro Company
Warren Thoma and Associates, LLC
Watts

Speakers & Panel Members

Keynote Address

Secretary John Laird, California Natural Resources Agency

Presentations

National Drought Perspective

Rob Sampson, PE, National Water Management Engineer, USDA — Natural Resources
Conservation Service

Groundwater Sustainability

William Alley, PhD, Director, Science and Technology, National Ground Water Association

Water Supply Challenges During Drought

Tim Quinn, Executive Director, Association of California Water Agencies

Landscape Irrigation Panel

Julie Saare-Edmonds, Senior Environmental Scientist, Landscape & Green Building Programs,
California Department of Water Resources

Briana Seapy, Sustainable Landscape Program Manager, California Urban Water
Conservation Coalition

Larry Rohlfes, CAE, Former Assistant Executive Director, California Landscape Contractors
Association

Mike Baron, National Specifications Manager for Water Management Products, The Toro
Company

Brent Mecham, CID, CLIM, CAIS, CIC, CLIA, Industry Development Director, Irrigation
Association, Moderator

Agriculture Irrigation Panel

A.G. Kawamura, Former Secretary, California Department of Agriculture and Current Grower
With Orange County Produce

Aric Olson, CAIS, CID, MBA, CSSBB, CPIM, President, Jain Irrigation

Rob Sampson, PE, National Water Management Engineer, USDA — Natural Resources
Conservation Service

Brandon Souza, Assistant Executive Director, California Farm Water Coalition

John Farner, Government and Public Affairs Director, Irrigation Association, Moderator

Irrigation Association Recommendations

The following recommendations are based on the official position statements of the Irrigation Association (www.irrigation.org/policy/position_statements.aspx) and the presentations and discussions held during the 2015 Drought Summit.

Policy Recommendations

Agriculture

1. Create federal tax incentives for the purchase of efficient agricultural irrigation equipment.
2. Advance adoption of efficient irrigation technologies in drought stricken areas through grants, cost-sharing and other financial aid.
3. Improve nation's water infrastructure, including conveyance improvements and increased storage.

Landscape

1. Adopt a model irrigation ordinance at the local level to increase irrigation efficiencies in newly installed commercial and residential landscape irrigation systems.
2. Authorize the U.S. Environmental Protection Agency's WaterSense program and incentivize the use of WaterSense-labeled technologies and services.
3. Invest in improving existing irrigation system efficiencies and management.
4. Improve nation's water infrastructure, including conveyance improvements and increased storage.

Research

1. Review and update the irrigation industry research priorities: www.irrigation.org/policy/ag_research_priorities.aspx.
2. Support increased public research funding, focused on water management and water efficiencies in agriculture and the managed landscape.

Educational Recommendations

1. Work with city leaders, local agencies and other non-governmental organizations to educate the public on water systems and the benefits of efficient irrigation.
2. Foster new ideas by supporting a culture of innovation that is open to embracing new water-efficient technologies and practices.

Keynote Address

Secretary John Laird, California Natural Resources Agency

Summary

The severity of the California drought means that for the first time in history, the state and federal governments provided a zero percent water allocation to California farmers. The limited amount of water available for agriculture has significant economic repercussions, with the latest numbers from the University of California, Davis, showing that more than 500,000 acres have been fallowed. In addition, 17,000 people have been let go from their jobs, and there has been a \$2 billion hit to the economy.

In order to deal with the drought, the governor first asked water agencies for a voluntary 20 percent reduction in water usage across California. The voluntary reduction was not successful and in 2015, the governor called for a mandatory 25 percent reduction in water usage. There were mixed reactions to the required cuts, with much of the pushback occurring because urban water users were asked to cut their water usage while agriculture was not included in the mandatory cuts. Despite this pushback, the people of California responded, and a 26 percent reduction in water usage occurred.

Moving forward, making the water system in California more sustainable must be a priority. California's water action plan includes ways to make existing water resources more sustainable, and the state can meet the goal of bringing in 1 million acre feet of water by following this plan (http://resources.ca.gov/california_water_action_plan/). As with many policy recommendations, one of the hardest parts will be getting public acceptance. The public believes that if you pay more you should get more, but with a limited resource like water, this expectation will not be met.

Challenges & Recommendations

With weather data showing that it has been disproportionately hotter across the state over the last 15 years, water resource challenges will likely continue under what could be a new climate norm of warmer temperatures. In addition to water shortages, another example of how warmer temperatures have been affecting the environment in recent years is the increase in the number of wildfires and the severity of these fires. If there has been a shift to a new climate norm, solutions to water challenges can no longer be based on the old climate.

Investments in infrastructure are critical and California should move away from its current water-delivery system by shifting to a dual system, which would end the use of potable water for landscape irrigation. The current water-delivery system is poorly maintained and wastes millions of gallons of potable water through leaks, ruptures, blockages, poor connections and thefts. Other infrastructure investments that will address long-term water challenges include increased water storage, dams and water recycling.

INVESTMENTS IN INFRASTRUCTURE

The current water-delivery system is poorly maintained and wastes millions of gallons of potable water through leaks, ruptures, blockages, poor connections and thefts.

California is also open to incorporating desalination in certain places but these efforts should be combined with increases to water recycling. Investments in both would clear up potable water for municipal use by going outside of the current system used to irrigate turf and other landscape materials. The challenge with desalination and recycling is the high cost of each.

Desalinization has a high energy cost, making it a more expensive alternative, while the capital cost of water recycling have thus far prevented the widespread implementation of such systems.

In addition to infrastructure investments, California must continue to implement groundwater regulations.

Presentations

National Drought Perspective

Rob Sampson, PE, National Water Management Engineer, USDA — Natural Resources Conservation Service

Groundwater Sustainability

William Alley, PhD, Director, Science and Technology, National Ground Water Association

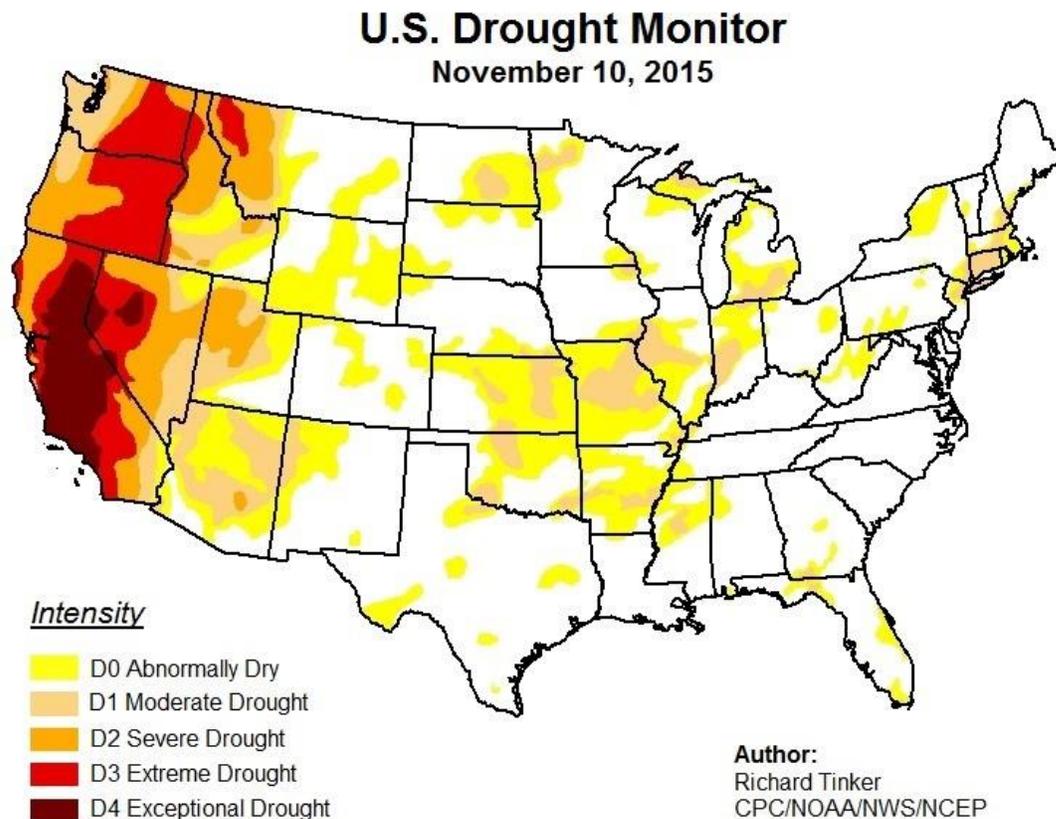
Water Supply Challenges During Drought

Tim Quinn, Executive Director, Association of California Water Agencies

Summary

The Nov. 10, 2015, drought monitor shows that in the majority of California, the drought has gotten worse or stayed the same. While droughts are a recurring feature of California's climate, we are currently dealing with an exceptional drought that is worse than extreme. This drought has been compared with the Australian Millennial Drought.

Figure 1: U.S. Drought Monitor. November 10, 2015 (Released November 12, 2015). <http://droughtmonitor.unl.edu>



In recent years, the state of California has experienced high temperatures, reduced snowpack and low water flows. The effects are being felt in numerous ways, including through an increase in wildfires, greater stress on ecosystems and land subsidence resulting from groundwater withdrawals. In addition to environmental changes, the drought has placed significant stress on the agricultural sector. Six percent of farmland in the state has been fallowed, totaling 550,000 acres.



The seriousness of the current drought has put a great deal of attention on water. As a result, many myths about western water law and water management in California have focused on public conversation and media coverage. One major myth is that agriculture uses 80 percent of California water. While this number was often repeated this year, the reality is that the number does not show the whole picture.

Consumptive use of water in California looks more like this:

- Instream flow (8 percent)
- Required delta outflow (7 percent)
- Managed wetlands (2 percent)
- Irrigated agriculture (41 percent)
- Wild and scenic rivers (32 percent)
- Urban (10 percent)

One important lesson learned during this drought has been that investments in storage and other drought preparation policies made during the 1987 drought have paid off. Over the past two decades, a statewide reduction in per capita daily water use (GPCD) occurred, and the state is better off than it would have been without investments in water infrastructure.

Additionally, over the last 10 years, California has received a significant investment in irrigated agriculture from the National Resources Conservation Service. NRCS invested over \$1 billion in irrigated agriculture, and California received the largest investment during this time.

The state continues to address the problem of ongoing water resource challenges. In 2015, California benefited from a mandatory rationing requirement and saw a 26 percent decline in water usage. As the state considers a more long-term approach, water agencies believe local or regional circumstances should be considered when implementing water management policies. With a reduction in water usage, local water agencies are seeing significant reductions in revenues and do not currently have the flexibility to increase water rates.

Challenges & Recommendations

Droughts and highly variable weather patterns may now be a normal part of the climate in California and much of the west. Moving forward, the management of water resources will be more important than ever. Integrated monitoring and modeling are recommended ways to ensure water conservation occurs. In order to manage water, it must be measured. One specific water resource that needs to be better managed is groundwater. In order to manage groundwater, it is important to know how much there is (e.g., storage) and to understand the unique aspects of each groundwater system. According to the National Ground Water Association, striking a balance between groundwater withdrawals and the annual amount of natural or artificial recharge will be critical



While the quantity of water available in California is of concern, water quality is another challenge that should be addressed. Groundwater and surface water are not separate resources and the management of both is important for sustainability and water quality. The time scale of groundwater recharge presents a challenge to the implementation of best practices in groundwater management. When best management practices to improve water quality are followed, there is no immediate improvement in nutrient levels in groundwater. It will take time to improve

water quality. To manage groundwater, it is recommended that California continue implementing the State Groundwater Management Act.

Additional recommendations include improving water markets, providing targeted federal funding and implementing policies within the Association of California Water Agencies Water Action Plan (www.acwa.com/spotlight/swap).

In its Water Action Plan, ACWA recommends increasing water storage, more conservation efforts and fixing the Delta. Additionally, water agencies would benefit from flexibility in setting water prices. ACWA works with partners in California to allow for more flexibility in water rates in order to fund infrastructure improvements while retaining Proposition 218's goal of protecting rate payers in California.

NRCS plans to continue providing funding and technical specialists where need is the greatest. At this point, the overall water application per acre is declining because of new and improved technologies. With the hardware involved in irrigation working well, a focus should be on innovative software.

The California drought is similar to the Australian Millennial Drought. Water reforms during the Australian drought focused on the whole water cycle and groundwater management. Reforms coming out of the millennial drought included:

Australian Millennial Drought

- *Licensing and metering of groundwater pumping.*
- *Recognition of groundwater and surface water as a whole water cycle.*
- *Water markets and trading.*
- *Relatively adaptable water policies.*
- *Ability to share shortages.*
- *Joint water management by states and the Commonwealth.*

Agriculture Irrigation Panel

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Rob Sampson, PE, National Water Management Engineer, USDA — Natural Resources
Conservation Service

Brandon Souza, Assistant Executive Director, California Farm Water Coalition

John Farner, Government and Public Affairs Director, Irrigation Association, Moderator

Summary

A system wide approach is critical to water conservation and this means looking for ways to improve both on-farm and district-scale water efficiencies, including investments in aquifer replenishment. As policy solutions are developed, it is important to have a vision of where we want to be. The focus should be on creating a system of abundance, not scarcity. By focusing on how to create abundance, we can come up with innovative and locally tailored solutions instead of prescriptive measures that may hinder progress.



Solutions already exist in the irrigation industry, and more agricultural land can be converted to efficient irrigation systems (e.g., drip, center pivot). Additionally, water-measuring technologies can help with the future management of water resources. It again comes down to the idea that “you can’t manage what you can’t measure.” Moving forward, greater focus must be on the management of surface water and groundwater. The tools are available for California to expand its economy and meet its goal of bringing in 1 million more acre feet of water.

An example of how to successfully manage surface water and groundwater is the Agricultural Water Enhancement Program initiative by the Idaho Water Resource Board. AWEP is a voluntary USDA program that provides financial and technical assistance to agricultural producers. Historically, Idaho managed surface water and groundwater differently. When this problem was addressed by Idaho, the state was able to hit target elevation levels for the Eastern Snake Plain Aquifer.

Challenges & Recommendations

There is already less agricultural land available, and more fallowing is occurring because of water resource challenges. On existing farmland, the focus should be on converting to efficient irrigation systems. Farmers face the challenge of increasing yield while conserving water, and new technologies will play a critical role in overcoming this challenge. An irrigation efficiency tax credit could provide financial support as farmers look to install efficient irrigation systems. Government funding to modernize agriculture will allow farmers to access industry solutions that are already available, and in turn, California will be more resilient in the future. Providing farmers access to innovative technologies is better than prescriptive water use policies.

Industry innovations and technologies will increase on-farm efficiency, but district-scale opportunities must also be embraced. Taking a system wide approach to addressing water challenges will take time and money. One challenge with this is figuring out how to fix public perceptions of the water system through educational outreach. Public education is critical as we work to manage water resources. The public should also be aware of the important role technologies and management practices play in growing the food people eat.



Additional recommendations include addressing water quality challenges to ensure food safety when using reclaimed water and increasing water capturing.

Landscape Irrigation Panel

Julie Saare-Edmonds, Senior Environmental Scientist, Landscape & Green Building Programs, California Department of Water Resources

Briana Seapy, Sustainable Landscape Program Manager, California Urban Water Conservation Coalition

Larry Rohlfs, CAE, Former Assistant Executive Director, California Landscape Contractors Association

Mike Baron, National Specifications Manager for Water Management Products, The Toro Company

Brent Mecham, CID, CLIM, CAIS, CIC, CLIA, Industry Development Director, Irrigation Association, Moderator

Summary

There have been significant changes in regulatory policy, the marketplace and consumer behavior in response to the ongoing drought in California. The California Department of Water Resources was charged with updating the existing Model Water Efficient Landscape Ordinance in Gov. Jerry Brown's April 2, 2015, executive order on the drought emergency. MWELo was originally passed in the 1990s and was updated for the first time in 2009. Cities and counties have adopted the state's MWELo or have written local versions of the ordinance.

Additionally, there is the constant challenge of preparing for the next drought. In the past, there have been cycles of complacency and panic in California when it comes to water conservation. While working on the updated MWELo, DWR reached out to the Irrigation Association, the American Society of Irrigation Consultants, city and county representatives, landscape designers, contractors and architects for input. A common theme throughout stakeholders is that water efficient products are available in the marketplace and should be incorporated into

“Ninety-six percent of respondents said clients are concerned about the drought, and a majority of clients want sustainable landscaping services.”

-Larry Rohlfes

landscape design. Consumer behavior has also changed as a result of this severe drought. In addition to new landscape irrigation practices, people are incorporating other water saving habits into their daily routines (e.g., showering less), which has allowed for the 26 percent reduction in water use. These behavior changes continue to spill over into the landscape industry. California

Landscape Contractors Association members were recently surveyed on the current drought and gave responses about the expressed needs of their clients. The survey found that customer preferences have changed because of the drought.

For example, 96 percent of respondents said clients are concerned about the drought, and a majority of clients want sustainable landscaping services. Landscape businesses are seeing the drought as an opportunity to categorize resilient and beneficial landscapes instead of relying on Band-Aid solutions of prescriptive water usage requirements.

This changing view of the local landscape has led people to “landscape with nature.” The goal is to use water where it is needed and to not waste water. Despite the focus on sustainable landscaping, deferred maintenance of irrigation systems is still the single largest cause of inefficient irrigation and outdoor water waste. A University of California, Riverside study of turf removal programs found that 2/3 of water savings came from fixing the sprinkler system and not from the replacement of turf.

“Despite the focus on sustainable landscaping, deferred maintenance of irrigation systems is still the single largest cause of inefficient irrigation and outdoor water waste.”

-Mike Baron

Challenges & Recommendations

How to best approach the current drought remains a major challenge. Moving forward, DWR would like to do more research on graywater and incorporate low tech, low cost and effective water storage resources (e.g., rain swale). The current drought should also be used as an opportunity to categorize resilient, beneficial landscapes. By incorporating appropriate plant materials and efficient technologies, landscapes can be part of the solution.

“Don’t want to see Band-Aid solutions...use this drought as an opportunity to categorize resilient, beneficial landscapes.”

-Briana Seapy

Population growth will create more challenges even if drought conditions are not present. For example, 15 to 20 million more people are in the San Joaquin area than in the 1970s, but rainfall is at the same level. A continual challenge will be how to both manage and maintain irrigation systems. A guaranteed way to conserve water is by making investments in the maintenance of already installed irrigation systems a priority.

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