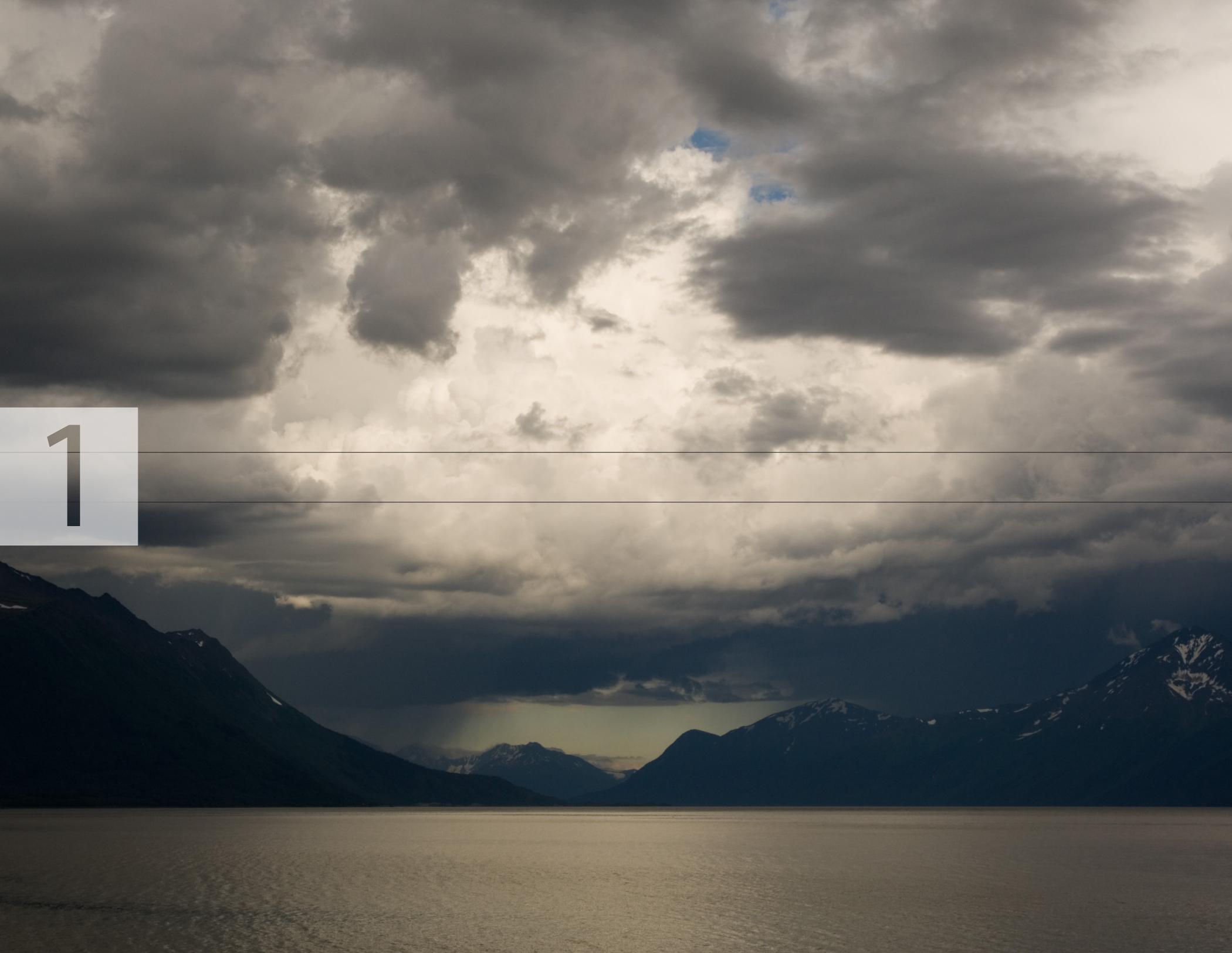


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**SECTION 1: Executive Summary**

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## Executive Summary

This report chronicles the events, presentations, and discussions of the Agricultural Water Reuse Joint Specialty Conference held October 29-31, 2006, in Santa Rosa, California.

The report is organized in six sections that follow the conference agenda, culminating in a series of take-home messages and four key recommendations for the U.S. Department of Agriculture (USDA) Research, Education, and Economics Mission Area.

Section Two offers a background on water reuse in agriculture and describes the current status of research, education, and extension program efforts in USDA. Among key observations are the diverse existing programs for research and extension efforts within the Agricultural Research Service (ARS) and the Cooperative State Research, Education, and Extension Service (CSREES). Foremost for both agencies is the opportunity to expand efforts to explore water reuse in agriculture through sound science and effective extension and education.

Section Three details examples of successful implementation of water reuse in agriculture. This section highlights the conference field trip that included stops at a local organic vegetable operation, a dairy operation, and a vineyard. The City of Santa Rosa has worked with these three agricultural operations to provide a high-quality, reliable source of water for irrigation. Section Two of the report continues with examples of effective water reuse in agriculture in California (Santa Rosa and Monterey), Florida, and Hawaii. Examples demonstrate the utility and value of water reuse in agriculture (California and Florida) while highlighting the need to expand options for irrigation water sources (Hawaii).

Section Four focuses on critical emerging issues in water reuse and the regulatory framework that is needed to accompany this source of water for use in agriculture. Producers need sound science to address consumer concerns that water reuse could lead to health concerns—particularly when this water is used to irrigate fresh vegetables. The importance of pathogens and their fate and transport in irrigation water was described. Health concerns related to pathogens and other contaminants were stressed in terms of risk assessment and regulatory approaches that exist to evaluate potential concerns and protect human health from pathogens.

Section Five addresses technologies needed to implement water reuse projects, social and economic issues that arise when projects are implemented, and agricultural productivity associated with recycled water. A critical component of technology development is locating facilities nearer to the end users of recycled water. Poor locations can lead to excessive distribution costs, limiting feasibility of water reuse applications. Public perception is another critical aspect of implementation. Surveys reveal that the public often is interested in the environmental benefits of water reuse but this support comes with concerns about odor, safety, and health. Customers receiving recycled water also have concerns—particularly related to safety, health, and liability. It's critical to overcome the public perception of "toilet-to-tap". Economic analyses reveal that bottom line cost-benefit analyses often do not reflect the full complement



of benefits arising from water reuse. Capturing these additional benefits is critical to demonstrating the economic utility of proposed projects. Finally, agricultural impacts of water reuse are described. Often, impacts include reduced productivity resulting from increased salinity in recycled water. Current research is focused on developing salinity resistant plants and evaluating plant tolerance to salts. This research could lead to irrigation recommendations that would describe how irrigation water could be “reused” sequentially on crops that have increasing salt tolerance.

The final two sections of the report detail discussions of conference participants and highlight Bold Steps for USDA and critical messages learned from the conference.

Section Six addresses challenges and opportunities identified by conference participants. Participants divided into four groups defined by key questions or issues highlighted in the conference:

1. Which crop for which place with what water?
2. Reducing human exposure during production and understanding exposure risks for consumption;
3. Improving public perception and acceptance; and
4. Management actions to improve irrigation with recycled water.

Groups were tasked with identifying key challenges that limited implementation of water reuse in agriculture. They also were asked to identify research, education, and extension opportunities that could help expand water reuse in agriculture. Conference participants developed a set of Bold Steps for USDA that culminated in an “implementation map” for these bold steps.

The final section of the report is dedicated to describing the “Take Home” message from the conference. The take home message takes the form of four key recommendations related to water reuse in agriculture:

1. Improve education and outreach on recycled water;
2. Conduct additional research and coordinate existing data on water reuse;
3. Set appropriate standards and develop a certification program for operators; and
4. Improve the role of USDA and other government agencies in promoting water reuse in agriculture.

## Recommended Citation

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