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Colorado Water Education Task Force ***2008 Final Report***

Submitted to: the Colorado Water Conservation Board

Produced by: the Colorado Water Education Task Force

A cooperative project of the Water Education Task Force
in collaboration with the Colorado Water Conservation Board (CWCB), Colorado
Alliance for Environmental Education (CAEE) and the Colorado Watershed Network
(CWN)

Table of Contents

Executive Summary	3
Recommendations	3
Preface	4
Introduction	4
Origins of the WETF Initiative	4
2008 Water Education Survey	4
Introduction	4
Survey Summary Results	5
Description of Respondents	5
Discussion of Findings	5
Focus Group Outcomes	9
Introduction	9
Opportunities and Threats to Effective Water Education	9
Common Framework for Water Education	11
Task Force Outcomes	11
2008 Scope and Initial Planning Committee Outcomes	11
Task Force Recommendations	13
Task Force Methodology	13
Considerations	13
Recommendations	14
Appendix A: Water Education Task Force Participants	16
Task Force and Planning Committee Participants	16
Focus Group Participants	17

Executive Summary

The Colorado Water Conservation Board charged the Water Education Task Force (WETF) with an initiative to better understand the current status of water education in Colorado. This report and its companion document “Water Education Survey and Focus Group Report: 2008 Results” represent the results of this effort.

The primary purpose of WETF was to assess current water education efforts in place throughout Colorado. This initiative is funded by the Colorado Water Conservation Board in partnership with the Colorado Alliance for Environmental Education and the Colorado Watershed Network.

Recommendations

WETF participants are recommending that the State of Colorado **lead efforts** for its agencies, municipalities, non-governmental organizations, residents and visitors to achieve higher levels of water stewardship by committing to a series of specific actions. These actions are phrased as the following recommendations*:

- Supporting a statewide public education initiative to increase the public’s understanding and stewardship of Colorado’s water resources. Colorado’s state funded water education programs are to focus beyond information transfer through printed or other media informational campaigns and incorporate further elements which develop appreciation, understanding, and ultimately action on behalf of Colorado’s water resources.
- Developing and supporting consistent and audience-appropriate messages to raise awareness about the importance of water in our state; including a public relations campaign.
- Establishing long-term, adequate funding for intra- and inter-state collaboration opportunities among Colorado’s water educators that build upon existing networks (including but not limited to clearinghouse/database of water education opportunities, interactive communication/discussion board, listserv, networking opportunities, grant opportunities, training opportunities on evaluation tools and best practices for water education providers, etc.).
- Maximizing learning opportunities by cross-collaborating with those working to educate about other natural resource issues (e.g., climate change, energy, wildlife, etc.).
- Coordinating education efforts across Departments and Divisions (i.e., coordinating efforts across the Departments of Education, Natural Resources, Health and Environment, Agriculture, Governor’s Energy Office and others, as well as, coordination within each Department).
- Ensuring that water resource content and stewardship skills are of continued importance to the Colorado Department of Education and integrated into the K-12 Model Content Standards. Characterize the needs of K-12 educators to include water education in classrooms.
- Establishing long-term, adequate funding to support or establish effective water resource education that emphasizes moving learners from awareness to action.
- Implementing an assessment strategy with well-defined objectives and benchmarks to measure the effectiveness of Colorado’s water education programs.
- Specify how the above recommendations are going to be accomplished by creating a detailed action plan.

(*Recommendations are not listed in any specific order.)

Preface

Introduction

The Colorado Water Education Task Force (WETF) was charged with an initiative to better understand the current status of water education in Colorado. The primary purpose of WETF is to provide guidance on ways to improve the understanding and stewardship of our water resources through education. This initiative is funded by the Colorado Water Conservation Board in partnership with the Colorado Alliance for Environmental Education and the Colorado Watershed Network.

During the first half of 2008, the task force conducted an extensive online survey of 292 water education providers in Colorado and convened a series of focus groups to describe key aspects of current water education efforts and to evaluate gaps, barriers and opportunities for improvement. The task force worked to establish consensus on a united platform for Colorado water education and formulated specific recommendations for improvement.

Origins of the WETF Initiative

The leadership of Colorado's Department of Natural Resources (DNR) sought more information about what is happening in the state when it comes to water education. The Colorado Water Conservation Board (CWCB) then contacted the Colorado Watershed Network (CWN) to discuss ways to gather this information.

After reviewing earlier efforts to answer this question, including an extensive report¹ prepared for the CWCB in 2001, the importance of gathering current information became clear. The state needed to understand who was educating Colorado's citizens, how and where they were doing it, what topics they were covering, and which audiences they were reaching.

Out of these early discussions, the Colorado Water Education Task Force (WETF) was created. CWN and the CWCB soon partnered with the Colorado Alliance for Environmental Education (CAEE) and CWN hired Rob Buirgy to coordinate and facilitate the process. During the first half of 2008, participants in WETF worked to find out what water education is available in Colorado. They accomplished that through a Water Education Survey; Adult, Youth and DNR Divisions Focus Groups; and the Task Force itself, which was responsible for the direction of the group and the review and analysis of results.

Participating entities during the early stages of the project included: Colorado State University, Colorado Department of Health and Environment, Colorado River Water Conservation District, Denver Water, Colorado Water Congress, Colorado Water Resources Research Institute, Colorado Foundation for Water Education, and the Colorado Division of Wildlife. More entities and individuals participated in the Focus Groups, and even more in the survey.

A full list of WETF participants is included in Appendix A.

2008 Water Education Survey

Introduction

A core component of this initiative was the online survey of water education providers, which was designed to establish an inventory of current water education efforts in Colorado. The focus of the survey was to gain a broad understanding of the water education programs and efforts currently being implemented throughout the state. While there was high interest in

¹ Kellogg, Nancy. *Final Report: 2001 Water Education Accomplishments and Recommendations*, 2001.

assessing the current state of water-related knowledge and how well Colorado citizens are prepared for future water management decisions, an assessment of that depth was beyond the scope of this survey.

A survey invitation was sent by email to many water education organizations' listserves and email lists. In addition, task force members were asked to forward the invitation to their networks. One limitation of the non-probability sampling strategy used in the survey is that it introduces a certain level of selection bias, that is, the initial sample contains individuals who are already connected to the water community and invitations from these people assumes awareness of water education to some degree. Discussion of survey results should take this into account.

It was not the goal of the survey to reach classroom teachers across the state. Some teachers did answer the survey, but the primary focus of the survey was to assess the amount and kind of education efforts outside of district based curriculum.

Four levels of survey analysis were performed: 1) Descriptive analysis, 2) Content analysis, 3) Geographical analysis, 4) Cross-comparison analysis.

Survey Summary Results

This section contains a brief discussion of major findings from the survey as a catalyst for thinking, discussion, and decision-making. In no way does this discussion exhaust the implications of this research. For a complete representation of survey results, please refer to the companion report: "Water Education Survey & Focus Group Report: 2008 Results."

Respondents were asked questions about water education related:

- staff and volunteer resources
- educational purpose
- available resources
- service area
- types of education
- barriers
- budget
- audiences reached
- opportunities for growth
- revenue sources
- content

Description of Respondents

The survey had 292 respondents in total, creating a snapshot of the water education currently available in Colorado. A series of questions were designed to characterize the survey respondents and assess the types of organizations providing water education, as well as the geographic, financial, and topical diversity of water education in Colorado.

Nonprofit organizations, government agencies, businesses/industry, higher education, and schools were all represented in the survey responses. The purpose of the water education described ranged from information transfer to behavior change. Of the respondents, more than three quarters worked on a local basis, with others operating programs with a statewide scope. The distribution of local educational programs was across the state, with the eastern plains, and the Yampa and North Platte basins showing the lowest response rates. Although agricultural interests are represented in the survey, there were a limited number of respondents from this community and results may not fully represent the impact on water education from this community.

Discussion of Findings

Access to Water Education

More than three quarters of water education providers who responded to this survey operated local programs in communities and counties across the state. However, there were very few respondents from the eastern plains and northwest region of the state, and, to a somewhat

lesser extent, the southwest region. These results are not necessarily indicative of the absence of water education programs in these communities; however, they may indicate opportunities to further reach out to these communities with already existing materials in use elsewhere in Colorado. Attempts were made to reach rural communities with the survey; however a more focused effort might need to be used to garner a more complete understanding of the water education happening in these communities.

While less than 1/4 of all respondents indicated they conducted education on a statewide scale, more than 50% of those with budgets over \$100,000 did so. Statewide entities receive the vast majority of reported state funding and more than 1/2 of total revenues. These results indicate significant investment in the statewide approach. However, it cannot be assumed that every statewide respondent reaches every community. Additional investigations are necessary to determine if some of the counties who did not report local programs are adequately receiving water education through statewide providers.

There are a number of water education resources (e.g., materials, programs, curriculum, etc.) in the state for providers. Respondents indicated the use of Project WET materials more than twice as often as any other material. Other resources or organizations that have significant traction among the community of respondents included Project WILD, Colorado Foundation for Water Education, Colorado State University, American Water Works Association, and the Environmental Protection Agency.

There may be significant opportunities for water education providers to reach out to those entities who reported limited access to resources. The online Colorado Alliance for Environmental Education searchable database and the Colorado Foundation for Water Education website link educators to resources. These efforts could be improved, and additional outreach to providers about these efforts may be necessary.

Program Budgets

Throughout the focus group discussions and the survey answers, insufficient time and money appeared to be major barriers for water education providers.

Respondents were asked to estimate their organization's annual budget and income for water education.

Overall, the specified annual amount of revenue for water education was reported as \$7,301,345. This amount comes from various sources, such as federal, state, and local government, school districts, higher education, nonprofit grants, business donations, private donations, or fees/retail sales. Respondents indicated that \$1,606,000 came from state sources, which was the second largest contribution to total revenues. Local government was the largest contributor, with \$1,836,550 in revenues. Local government contributions were the largest factor for smaller program budgets, while state sources were the largest contributor for programs with budgets over \$50,000.

The removal of monetary limitations can often resolve limited staff and time as barriers to implementing education programs. These two limitations (money and staff) were listed by the majority of respondents. Fifty six percent of respondents who provided budgetary information indicated that they conduct water education for less than \$5,000 annually, and respondents that have budgets over \$100,000 indicated with the most frequency that money is a limiting factor. Such limited resources should provide additional incentive to further understanding the effectiveness and traction of programs within their communities, and focus for federal and state

funding agencies. These limitations also suggest improving opportunities to collaborate and leverage resources might increase effectiveness throughout the water education community.

Five budget categories (see Table 1) were used to assess differences between how questions were answered. For instance, the lower the budget, the less likely respondents were to indicate they had evaluation mechanisms in place for their programs. Program budgets are discussed in the next section in the context of the types of water education available throughout Colorado.

Table 1 Budget Categories
Less than \$5,000
\$5,000 to \$25,000
\$25,000-\$50,000
\$50,000 - \$100,000
Over \$100,000

Audience, Content, and Contact Time

A series of questions were designed to characterize the water education provided by the survey respondents. Questions focused on the types of education provided, audiences reached, content, and resources. The range of opportunities (types of education) varied from brochures to multi-day residential programs. This is an extremely vast scope, ranging from information only pieces (e.g., brochures) to education programs focusing on participants learning through water related activities and service projects.

A diversity index was created for educational audience, type, and content area. Each of the questions relating to these indices allowed respondents to select more than one answer. If respondents tended to select many answers, then diversity scores increase. The fewer answers selected, the lower the diversity index score by budget category. Budgets less than \$5,000 tended to have the lowest diversity score, while budgets over \$100,000 had the greatest diversity in the type of educational delivery method used and the audiences reached. Budgets between \$25,000 and \$50,000 had the highest topic score, showing the broadest number of topics, with less focus. The number of audiences reached was the only index that increased directly compared to budgets.

These results indicate that water education providers in the lowest budget category are generally focused, perhaps out of necessity or mission driven reasons, on who they reach, how they reach these individuals and about which topics they educate their target audiences. Those with the largest budgets illustrated a tendency to be more focused on educational topic than those with budgets in the middle range. However, the largest budget category did diversify in how they delivered the message and to whom they delivered it. These results may be skewed by the numerous statewide programs in this budget category, and sizeable local programs may have a need to be diverse in the types of educational topics they cover.

The median number of adults reached by each program increased with budget size, though budget categories from \$5,000-\$25,000 and \$50,000-\$100,000 reach more adults overall. Some of these results may be skewed because several programs in these categories reach large numbers of adults through publications. Publications were in the top three educational types used by the three middle budget categories. The pattern is even stronger for youth. Budgets in the \$5,000-\$25,000 range reported reaching the most youth in total, as well as, the most per respondent. Further investigation is necessary to understand the nature of this pattern to determine if these higher numbers can fully be explained by use of publication materials.

Although youth are more often the reported target audience of survey respondents, nearly two thirds of those reported reached are adults. Further exploration needs to be done to determine (1) if the difference is due to mailings and other mass media outlets, (2) if there are more adult programs, (3) if the primary outlet for educating youth were not adequately represented in the

survey results, or (4) if the results merely reflect Colorado's population (according to the U.S. Census Bureau's 2006 population estimate 24.6% of people in Colorado are under 18). These results also may highlight that adults may be reached more easily through mail and information campaigns than with person to person educational programs.

The survey results indicate that many educators do not know the level of contact time with their audience, as is typically the case with publications. Service learning was in the bottom three educational types reported in four out of five budget categories. This may be due to the significant amount of contact time necessary to move learners from awareness to action through participation in a meaningful service project addressing water issues. Similarly, sessions of a half day or longer were more rarely reported than limited time spent with respondents' target audience. These results indicate that there may be significant opportunity to increase the quantity and quality of action-oriented programs across the state.

With regard to topic, those budgets in the smallest category were the only ones where riparian/wetland and aquatic life topics were in the top three reported frequencies. This indicates that the large numbers of small budget programs are most focused on environmental issues compared to programs with larger budgets. General Water Education, Water Conservation, and Water Quality were commonly reported as covered topics across all budget categories. Watershed Management was in the top three for the largest three budget categories. Water Quantity/Supply topics were marked by respondents at levels greater than 56% for the top three budget categories. Water Recreation, Water Treatment, and Water Rights were consistently reported at lower frequencies.

These responses may suggest that basic level water information is being provided in water education programs, and few programs are addressing more specialized topics. While not every topic should be incorporated into educational programming at the same frequency, there are likely additional opportunities to add depth to the water education being covered. This lack of depth may indicate a trend in water education where complex water issues are not addressed as often as more simplistic concepts. Informational materials such as brochures, envelope stuffers, and other printed materials may build basic awareness, yet additional elements that develop appreciation, understanding, and ultimately action are necessary. To develop future leadership, stewardship, and a workforce in water resources the total dollar amount spent on water education could likely be used more effectively if fewer resources were used to support printed materials and more to conduct educational programs.

Survey Weaknesses and Strengths

The survey did have several weaknesses, including that limited data was collected on respondent demographics, making it difficult to stratify the responses or to verify statistical validity of the sample population. The survey was not intended to address program effectiveness. The survey did not identify who the successful educators are, where they are and does not go in depth regarding how successful organizations may be structured. The sampling design relied heavily on social networks, thus providing the potential to skew the data. Lastly, the survey was designed for many different types of educational providers to give input. However, some questions were awkward for various groups, such as teachers for whom the survey was not designed to explicitly reach. In addition, the definitions of some phrases in the questions were not always clear, leading to some unresolved questions, such as the amount of contact time spent with each respondent's audience.

The strengths of the survey are many. Respondents came from a broad geographic range and diverse set of education providers. While many questions are left unanswered, such as how

water education is being implemented in schools and which programs are most effective, the results provide significant insight into what programs are being provided in the state of Colorado for the purposes of water education. There are numerous programs covering a wide variety of topics and utilizing different educational delivery types. Common themes in the focus groups pointed to the need for increased collaboration, and the survey results suggest some areas that are not currently being reached or utilized. These include rural areas in the state, the use of webcasts, and service learning, and education about water rights, water treatment, and water recreation. While the survey indicated that these may be relatively weaker in the state, there are opportunities to decide whether and how to focus on expanding and improving Colorado's water education.

Focus Group Outcomes

Introduction

Focus groups were held to gather additional information directly from water education providers about the status of water education, share experiences from different kinds of advisors, and start conversations about the vision of water education in Colorado.

Focus group participation was limited to water education providers, and did not include representatives of the intended audience/recipients. Diverse representation was a key aspect for the focus groups including geographic representation (all corners of the state), population density distribution (urban, rural, suburban), topic areas (conservation, water quality, etc.) and intended audience age range (programs designed for youth through adult audiences).

Focus groups were convened with 3 primary focus areas - the DNR agencies, organizations conducting youth education, and organizations conducting adult education. The final rosters of active participants included 11 Agency representatives, 13 Adult- and 21 Youth-focused water education providers.

The three focus groups reviewed preliminary survey responses, described the threats and opportunities related to water education, and established a common objective for their water education programs in Colorado. For a complete representation of focus group results, please refer to the companion report: "Water Education Survey and Focus Group Report: 2008 Results."

This section contains the opportunities and threats to water education and the common framework that were developed by the Task Force using the work completed by the Focus Groups.

Opportunities and Threats to Effective Water Education

Focus group participants developed individual/organization water education program assessments of internal strengths and weaknesses, and external opportunities and threats.

The common themes from the focus groups were summarized by Task Force planning committee members, and then reviewed by a combined group of task force and focus group members. These overarching opportunities and threats were identified as:

Water Education Opportunities

1. Many programs are providing water education
 - Infrastructure exists.

- Diverse groups are involved.
- Large water providers are producing water-related messages.
- 2. Collaboration opportunities abound
 - Large network exists.
 - Long term partnerships exist.
 - Agricultural can be connected with municipal through large agricultural sectors.
- 3. Colorado Climate
 - Arid state prone to drought.
 - Conservation and protection are necessary.
 - Water is limited and renewability is variable.
 - Unique water rights system exists.
 - High level of public awareness.
- 4. Climate change
 - National media attention raises interest and provides focus on water issues.
- 5. Receptive audiences
 - Colorado citizens participate in numerous water-related environmental and recreational activities which creates a more receptive audience to water issues.
 - Growing population provides different audiences to draw from and focus on.
- 6. State government support
 - Current state government proactively supports and advocates for the protection and wise use of water resources.
- 7. School Standards
 - Colorado content standards are being revised; there may be an opportunity to add more skills related to water education.
- 8. Funding
 - Though limited, a diversity of funding sources are available.

Water Education Threats

1. Funding and staff resources
 - Limited funding continues to be a primary obstacle to sustaining current water education initiatives.
 - Realities of managing water resources (e.g., cost, infrastructure gaps, rate structures, etc.).
2. Quality
 - Few measurement tools are being used to evaluate the quality of education materials and resources.
 - Few water education programs employ a method to evaluate their effectiveness in modifying behaviors related to water protection and water conservation.
 - Programs to measure effectiveness are often overlooked or poorly funded.
 - Subjective measures of educational success/effectiveness are not valued as much as quantitative measures.
 - Lack of quality professional development opportunities for water education providers.
3. Common Message
 - Lack a common water education platform/message that promotes a consistent message on the value of the state's water resources.
 - There is a lack of common definitions and terminology for water education (e.g., brochures are not curricula, but both are called 'education materials').

4. Coordination

- Conflicts, perceived divisions, mixed and nonproductive messages and attitudes hamper educational efforts. (e.g., Rural/urban, east/west slope, ground/surface water.)
- Lack coordination between water quality and water quantity efforts.
- Not enough vertical and horizontal integration or coordination among diverse programs and providers.
- Complexity of water systems, providers and users make coordination extremely difficult.

The opportunities and threats were then used to develop the common framework and recommendations.

Common Framework for Water Education

A common framework was created from the focus groups' work to develop a common objective. This framework is intended to set the foundation for water education efforts in Colorado. The task force and focus groups developed these common themes for their work in water education in Colorado:

- water in Colorado is a shared, limited, and vulnerable resource; and
- water is a precious resource that must be properly valued by Colorado citizens and its many visitors for the benefit of our economy, quality of life and environment.

Furthermore, these common goals were identified for water education efforts throughout the state:

- achieve higher levels of water stewardship of Colorado's water resources through education; and
- increase the awareness and understanding about the importance of water in Colorado.

These efforts support State efforts in water resource planning such as the Colorado Water for the 21st Century Act, the Statewide Water Supply Initiative and studies of developable water under the Colorado River Compact.

The survey results, opportunities and threats, and common framework were used by the Task Force to create recommendations for improving water education in Colorado as reported in the next section.

Task Force Outcomes

2008 Scope and Initial Planning Committee Outcomes

The planning committee met on October 29th, 2007 to develop the scope of work and initiate the first components of the project. This committee was comprised of a small group of water education professionals which grew into the larger Task Force.

During this meeting the planning committee finalized the survey format and questions; developed the basic structure of the focus groups; and generated a list of groups and individuals to participate in the survey, task force, and focus groups. As the WETF initiative progressed, the original Planning Committee grew into the larger 'Task Force'. Members of the task force included:

Bette Blinde	Executive Director, Colorado Foundation for Agriculture
Jacob Bornstein*	Executive Director, Colorado Watershed Network
Rob Buirgy*	Task Force Coordinator, Colorado Watershed Network
Jeff Crane	Executive Director, Colorado Watershed Assembly
Rita Crumpton	Public Education, Participation and Outreach Workgroup Chair, Colorado Interbasin Compact Committee
Veva Deheza*	Section Chief, Office of Water Conservation and Drought Planning, Colorado Water Conservation Board
Nolan Doesken	Colorado State Climatologist, Colorado Climate Center, Colorado State University
Liz Gardener	Suburban Conservation Coordinator, Denver Water
Ali Goulstone Sweeney*	Executive Director, Colorado Alliance for Environmental Education
Wendy Hanophy*	Formal Wildlife Education Coordinator, Colorado Division of Wildlife
Greg Hertzke	External Affairs Manager, Central Colorado Water Conservancy District
Diane Hoppe	Water Resources Consultant, Colorado Foundation for Water Education
Ted James	Middle School Science/Civics Teacher, Eagle Valley Middle School
Nancy Kellogg	Science Education Consultant, Self Employed
Doug Kemper	Executive Director, Colorado Water Congress
Patty Kincaid	Secondary Science Coordinator, Denver Public Schools
Tim O'Keefe	Education Director, Roaring Fork Conservancy
Tammie Petrone	Grants Coordinator, CWCB
Jim Pokrandt*	Communications and Education, Colorado River Water Conservation District
Kevin Reidy	Water Conservation Supervisor, City of Aurora (Colorado WaterWise Council)
Curry Rosato	Watershed Outreach Coordinator, City of Boulder/Keep it Clean Partnership
Jo Scarbeary*	Project WET Coordinator, Colorado Watershed Network
Nicole Seltzer*	Executive Director, Colorado Foundation for Water Education
Ray Tschillard	Director, Poudre Learning Center
Ben Wade*	Water Conservation Coordinator, CWCB
Reagan Waskom*	Executive Director, Colorado Water Resources Research Institute
Mike Wilde	Educator, Roaring Fork School District

*Planning Committee Member

Task force members were asked to fulfill the following roles:

- finalize the water education survey tool,
- disseminate invitations to participate in the survey,
- participate as survey respondents where appropriate,
- assist with focus group planning, and
- review the final report.

The following tasks were assigned to focus groups:

- Review survey results and the survey summary report for accuracy and completeness.
- Develop a more in-depth understanding of the current status of water education in Colorado.
- Evaluate gaps, barriers and opportunities in Colorado water education relative to common water education objectives developed by each focus group.
- Produce meeting summaries describing the key aspects of current water education programs in Colorado, outlining gaps, barriers and opportunities to optimize water education for their audience.

Task Force Recommendations

Task Force Methodology

Task Force participants attended a series of meetings as the survey analysis, common framework, opportunities and threats, and recommendations took form. Focus Group work products were relayed to working groups and individual Task Force members to craft the summaries and recommendations contained in this report.

In an effort to build support and create a report that is representative of the diverse water education community, the draft report was posted to the CWCB website on July 8 and a public comment period was held through July 16, 2008. A call for comments email was sent to the CWCB email list, CAEE listserv, Project WET Facilitators Listserv, Colorado Science Educator Network, and Colorado Watershed Assembly Inflow Newsletter. As well, task force and focus group members were asked to comment on the report and send the call for comments to their networks and colleagues. In addition to the 20 individuals who provided written comments on the report, 24 people attended a two hour meeting on July 15 to provide input. Comments were categorized, reviewed, and addressed as appropriate for this version of the report.

Considerations

There are many successful water education efforts happening within Colorado and in other states. The Task Force drew upon experience with these programs to shape the recommendations in this report; however, future efforts should identify best practices and models from within Colorado and other states.

Despite attempts to include the agricultural community and the Department of Education in the survey, focus groups, and task force; there was limited participation from these communities. Future efforts to survey water education efforts or act on the recommendations in this report should specifically reach out to representatives from the agricultural community and Department of Education. At a minimum, input and participation from the Department of Agriculture, as well as, various agricultural-related groups such as the Colorado Farm Bureau, the Rocky Mountain Farmer's Union, the Colorado Dairy Farmer's Association, and Colorado Agricultural Water Alliance (CAWA) should be sought so that the agricultural community is well represented.

The survey did not address cultural or socio-economic characteristics of the water education providers or audiences. The inclusion of a diversity of perspectives will strengthen any future efforts to improve water education. Therefore, future efforts should focus on obtaining input and feedback from different cultures, races, genders, social groups, and ages.

Colorado is a large geographic area, with a varying amount and quality of water education across regions. This report attempts to provide an overview of water education throughout the

state. This approach generalizes conditions for the state; and it is important to recognize that the conditions in each local watershed in Colorado will vary significantly.

The types of opportunities available and referred to as education within the water education community varied from brochures to multi-day residential programs. This creates a broad definition of education and is inclusive of the many ways to increase awareness. However, educational research, task force members, focus group members, and public comments agree that printed and other informational avenues do not lead to stewardship or effective learning by themselves.

Recommendations

In keeping with their charge to provide recommendations for improving water education in Colorado, Task Force members considered the opportunities and threats identified during this project through the lens of their common goals for water education throughout the state. The two common goals agreed upon by members of the task force and focus groups are (1) to achieve higher levels of water stewardship of Colorado's water resources through education, and (2) to increase the awareness and understanding about the importance of water in Colorado.

In light of these goals, participants in the WETF are recommending that the State of Colorado **lead efforts** for its agencies, municipalities, non-governmental organizations, residents and visitors to achieve higher levels of water stewardship by*:

- Supporting a state-wide public education initiative to increase the public's understanding and stewardship of Colorado's water resources. Colorado's state funded water education programs are to focus beyond information transfer through printed or other media informational campaigns and incorporate further elements which develop appreciation, understanding, and ultimately action on behalf of Colorado's water resources.
- Developing and supporting consistent and audience-appropriate messages to raise awareness about the importance of water in our state; including a public relations campaign.
- Establishing long-term, adequate funding for intra- and inter-state collaboration opportunities among Colorado's water educators that build upon existing networks (including but not limited to clearinghouse/database of water education opportunities, interactive communication/discussion board, listserv, networking opportunities, grant opportunities, training opportunities on evaluation tools and best practices for water education providers, etc.).
- Maximizing learning opportunities by cross-collaborating with those working to educate about other natural resource issues (e.g., climate change, energy, wildlife, etc.).
- Coordinating education efforts across Departments and Divisions (i.e., coordinating efforts across the Departments of Education, Natural Resources, Health and Environment, Agriculture, Governor's Energy Office and others, as well as, coordination within each Department).
- Ensuring that water resource content and stewardship skills are of continued importance to the Colorado Department of Education and integrated into the K-12 Model Content Standards. Characterize the needs of K-12 educators to include water education in classrooms.
- Establishing long-term, adequate funding to support or establish effective water resource education that emphasizes moving learners from awareness to action.

- Implementing an assessment strategy with well-defined objectives and benchmarks to measure the effectiveness of Colorado's water education programs.
- Specify how the above recommendations are going to be accomplished by creating a detailed action plan.

(*Recommendations are not listed in any specific order.)

Appendix A: Water Education Task Force Participants

Task Force and Planning Committee Participants

Bette Blinde	Executive Director, Colorado Foundation for Agriculture
Jacob Bornstein*	Executive Director, Colorado Watershed Network
Rob Buirgy*	Task Force Coordinator, Colorado Watershed Network
Jeff Crane	Executive Director, Colorado Watershed Assembly
Rita Crumpton	Public Education, Participation and Outreach Workgroup Chair, Colorado Interbasin Compact Committee
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Reagan Waskom*	Executive Director, Colorado Water Resources Research Institute
Mike Wilde	Educator, Roaring Fork School District

*Planning Committee Member

Focus Group Participants

Marta Ahrens ¹	Public Information Officer, Colorado Division of Water Resources
Laura Arndt ³	Curriculum Specialist, Nature Connections
Peter Barkmann ¹	Ground Water Specialist, Colorado Geological Survey
Troy Bauder ²	Extension Specialist, Water Quality Dept., Soil and Crop Sciences, Colorado State University
Kelli Bee ³	Professional Development, Front Range Earth Force
Bette Blinde ³	Executive Director, Colorado Foundation for Agriculture
Matt Bond ³	Community Relations, Denver Water
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