

COLORADO  
2015 PUBLIC WATER SYSTEM  
TRAINING STRATEGY

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CAPACITY BUILDING UNIT  
COLORADO SAFE DRINKING WATER PROGRAM

WATER QUALITY CONTROL DIVISION  
COLORADO DEPT. OF PUBLIC HEALTH AND ENVIRONMENT

July 2010

FINAL

## **VISION:**

**IN 2015, PUBLIC WATER SYSTEM TRAINING SUPPORTED BY THE COLORADO SAFE DRINKING WATER PROGRAM IS CONSISTENTLY HIGH QUALITY, RELEVANT, AND WELL-COORDINATED STATEWIDE**

## **INTRODUCTION**

In Colorado, over 2,000 public water systems are responsible for supplying safe drinking water to the public. They range in size from a small restaurant or community of 25 people to a service area the size of metropolitan Denver. Some use groundwater wells as a source of supply, and some use the state's rivers, lakes, and reservoirs. Treatment at public water systems spans a broad range – from a simple well and chlorinator to complex treatment systems with a construction and operations price tag in the millions of dollars each year.

Regardless of the system size or complexity, drinking water treatment and distribution is always required to be conducted under the direction of a responsible certified water professional and properly managed by knowledgeable and competent leadership. Human capital is just as critical as physical infrastructure in the complex systems that supply safe drinking water to the public in Colorado.

Because safe drinking water doesn't happen without a well-trained workforce, the Capacity Building Unit of the Safe Drinking Water Program has focused on ensuring that the best training is made available to professionals in the drinking water industry across Colorado.

The *Colorado 2015 Public Water System Training Strategy* [the 2015 Strategy] is a culmination of 12 months of work to establish a direction for training services over the next five years. This plan was built on a foundation of data analysis and stakeholder input, with a particular emphasis on focusing limited resources on services in the areas of greatest need and potential impact to strengthen the ability of all Colorado public systems to provide safe drinking water to the public.

## BACKGROUND

The purpose of Capacity Building Unit (CBU) of the Colorado Safe Drinking Water Program is to provide training, technical assistance, and management support services to public water systems so they can strengthen their ability to supply safe drinking water to the public. Training being key to our purpose, in 2009, CBU initiated a four-phase project to develop a plan for the future of public water system training services in Colorado. This work included identifying gaps between water system training needs and available training services in Colorado. The overarching goals of this work have been to ensure that the best training services are offered and that resources are utilized as effectively and efficiently as possible.

The four-phase project was designed to:

- Conduct a study of the most common failures at Colorado's public water systems and identify their root causes<sup>1</sup>;
- Establish a baseline and preliminary gap analysis of existing training and technical assistance services for public water systems<sup>2</sup>;
- Convene a Training Roundtable to review and evaluate common compliance weaknesses at public water systems, build consensus on identified gaps in existing training services, and propose steps for developing a more cohesive, organized, and strategically aligned training and assistance network<sup>3</sup>; and
- Apply project results to develop a five-year strategic plan for CBU training services.

The first three phases of this project provided data on areas of weaknesses at public water systems and opportunities to enhance training services, and reaffirmed CBU's role in providing leadership and coordination support to the training community. An important finding of the Training Roundtable was that there is broad stakeholder support for CBU to provide statewide leadership regarding training. This is because of our unique position in providing funding for a significant portion of the core training available in Colorado and because of our responsibility to provide services statewide.

The 2015 Strategy is the culmination of the fourth and final phase of this project. It will guide annual work planning and priority setting related to public water system training in the Capacity Building Unit for the planning period spanning state fiscal years 2011 through 2015, from July 1, 2010 through June 30, 2015.

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<sup>1</sup> Jeff Oxenford and Sharon Israel Williams, Capacity Building Unit, Safe Drinking Water Program. September 2009. *Failure and Root Cause Analysis Report*.

<sup>2</sup> Margo Griffin and Sharon Israel Williams, Capacity Building Unit, Safe Drinking Water Program. January 2010. *2009 Baseline Assessment Report on the Status of Public Water System Training Opportunities in Colorado*.

<sup>3</sup> Margo Griffin and Sharon Israel Williams, Capacity Building Unit, Safe Drinking Water Program. May 2010. *February 23, 2010 Colorado Public Water System Training Roundtable Summary Report*.

## 2015 VISION AND GOALS

By 2015, our vision is that all public water system training supported by the Colorado Safe Drinking Water Program is consistently high quality, relevant, and well-coordinated statewide. To achieve that vision, the 2015 Strategy establishes five overarching goals to direct planning and prioritization over the five year planning period:

- Goal 1: Set Standards for High Quality Courses
- Goal 2: Define Core Curriculum
- Goal 3: Support Statewide Training
- Goal 4: Coordinate Training Offerings and Schedules
- Goal 5: Cultivate a Supportive Learning Environment

### **GOAL 1: SET STANDARDS FOR HIGH QUALITY COURSES**

In 2015, we will have standards for high quality public water system training courses, with the following planned outcomes:

- Continue adoption of the “2015 Training Model” by incorporating four elements into all new training. Overwhelmingly, classes based on this model have been filling to capacity and have resulted in very high ratings from attendees. All new training will follow this model.
- Establish and implement a routine of training evaluation including revisiting the relevance of training material based on analysis of public water system failure data and stakeholder input, and potentially other data sources such as operator certification exam pass rates.
- Assess the value of making curriculum materials available for all high quality sponsored training on a clearinghouse website, and if appropriate establish such a clearinghouse.
- Establish a new program of train-the-trainer support services, including training on instructional design for adult learners.
- Require all performance partners providing training

#### **2015 Training Model Elements**

- 1. Established curriculum**
- 2. Excellent Instructional Design**
- 3. Focused and Relevant Material**
- 4. Outstanding Instructors**

services to report on pre- and post-training results and trainee feedback. Develop system of analyzing results and feedback collected.

## ***GOAL 2: DEFINE CORE CURRICULUM***

In 2015, we will have a defined core curriculum of training courses covering focused and relevant material for public water system professionals. In the past, CBU has primarily relied on performance partners to decide appropriate need-to-know criteria to incorporate into sponsored training. While this approach has resulted in some excellent training content that meets the needs of the public water system community, it has not done so consistently. Based on recent research, there are many areas where public water systems are failing, yet training services are not provided on all relevant subjects.

In 2015, the core curriculum will align with industry standards for need-to-know competencies and will serve as a career roadmap. We will plan for the following outcomes:

- Adopt the terminology used in the Water Sector Competency Model (2009) developed through a partnership among American Water Works Association (AWWA), Environmental Protection Agency, Office of Water and the Water Environment Federation (WEF)<sup>4</sup>.
- Define a set series of courses to be offered on a routine basis. The series will be able to serve as a career roadmap, covering Water Sector Competency Model Tiers 4 and 5, Industry-Wide and Water Sector Technical Competencies, Tier 9, Management Competencies, and selected subjects related to high failure rates in Tiers 6 through 8. Specifically we will continue prioritizing training in the areas of conventional surface water treatment operation, distribution system operations, and monitoring and reporting, including developing specific need-to-know technical content.
- Evaluate utility of Sacramento training manuals<sup>5</sup> and other established resources for use in courses sponsored.
- Evaluate the need to update course curriculum on a routine basis and incorporate updates into planning efforts.
- Share technical content, including need-to-know competencies, for each core curriculum course as it developed.

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<sup>4</sup> Water Sector Competency Model website, accessed June 2010:  
<http://www.careeronestop.org/competencymodel/pyramid.aspx?WS=Y>

<sup>5</sup> Sacramento State Office of Water Programs website, accessed July 2010:  
[http://www.owp.csus.edu/training/courses/drinking\\_water/index.php](http://www.owp.csus.edu/training/courses/drinking_water/index.php)

- Engage subject matter experts as performance partners as much as possible to develop, review, and update core curriculum.
- Transition to requiring all performance partners to cross-reference the content covered in the training to the Tier and Competency categories covered in the Water Sector Competency Model.
- Seek training unit approval for sponsored training. As new or updated need-to-know criteria is developed for use by the Colorado Water and Wastewater Facility Operators Certification Board and its contractors to perform duties under Regulation 100, including establishing test questions and granting training unit approval, evaluate the need to adjust core curriculum.

### ***GOAL 3: SUPPORT STATEWIDE TRAINING***

In 2015, we will support statewide training through funding a variety of performance partners and through sharing staff resources as subject matter experts. We will plan for the following outcomes:

- Establish a training grants program in specific regions to support high quality training, including training specifically targeted to rural and underserved areas of the state.
- Issue requests for proposals for specialty training areas to support performance partners.
- Plan for statewide coverage, ensuring high-quality training events in rural and urban areas to meet their unique needs.
- In addition to classroom and field-based learning, evaluate and adopt appropriate non-traditional training environments, including mobile labs and online services.
- Evaluate and act on opportunities to partner more closely with Colorado's community college system and K-12 school districts, including support of and alignment with SECTORS Get Into Water! Project<sup>6</sup> efforts.
- Assign staff to participate in training events as participants, facilitators, subject matter experts, and instructors.
- Establish an outcome-based feedback system, including metrics to support the evaluation of the effectiveness of instructors, content, and delivery by assessing how well learning has actually occurred, e.g., pass rates on exams, future updates to the Failure and Root Cause Analysis data trends, student feedback on the application of skills learned, etc.

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<sup>6</sup> Get Into Water website, accessed July 2010: [www.getintowaterco.org](http://www.getintowaterco.org)

#### ***GOAL 4: COORDINATE TRAINING OFFERINGS AND SCHEDULES***

In 2015, we will coordinate training offerings in terms of content, location, and timing to best meet the needs of the drinking water industry in Colorado. We will plan for the following outcomes:

- Establish a common catalog of a set series of courses offered by CBU and performance partners receiving funds administered by CBU. Evaluate the appropriateness and utility of, and demand for, including courses funded by other entities.
- Coordinate and publish a common schedule of courses offered by CBU and performance partners receiving funds administered by CBU. Evaluate whether to also include other courses funded by other entities.
- Establish a strong website presence to communicate about training opportunities and their relationship to the Water Sector Competency Model and a career roadmap.
- Prioritize open and collaborative communications with leadership of related workforce development efforts, including the SECTORS Get Into Water! Project, and leadership of training providers, including Colorado Rural Water Association (CRWA), Rural Community Assistance Partnership (RCAP), and the Rocky Mountain Section of the American Water Works Association (RMSAWWA).

#### ***GOAL 5: CULTIVATE A SUPPORTIVE LEARNING ENVIRONMENT***

Broadly speaking, workforce development is more than providing an excellent, well-designed, relevant training event at the right place, at the right time, taught by the right instructors. (Although, all of those pieces are critical.) We have heard from stakeholders that direct training support is an important role for CBU, but it does not stand alone. There are important ancillary elements of a successful program, including a focus on student-centered learning, coordinating the efforts of the training community, public outreach and education, and operator empowerment and recognition. In 2015, we will have a supportive learning environment. We will plan for the following outcomes:

- To support workforce development, evaluate support of community college students and SECTORS Get Into Water! Project students through scholarships or internships, potentially sponsored in association with public water systems.
- Identify opportunities to boost awareness of the water industry through outreach, public education, and community involvement. Lead or support efforts within the water community to communicate to the general public the importance of public water system services.

- Continue an internship program to bring talented college students to the Safe Drinking Water Program for career development.
- Develop or support partners who maintain website content with resources on the water profession.
- Convene stakeholders regularly to evaluate training needs and discuss future strategies.

## **WORK PLANNING AND RESULTS REPORTING**

By 2015, our vision is that all public water system training supported by the Colorado Safe Drinking Water Program is consistently high quality, relevant, and well-coordinated statewide. To achieve that vision, the 2015 Strategy establishes five overarching goals to direct planning and prioritization over the five year planning period, as described in this strategy document.

We will develop a phased approach to the 2015 Strategy, to be documented in annual Capacity Building Unit work plans and annual Safe Drinking Water Program work plans over the next five years. We will also work to ensure that work planning aligns with grant requirements to allocate resources. In addition, we will collect data throughout the year and report on the number of individuals trained, the number of training hours supported, the cost of training, and metrics and analysis evaluating the effectiveness of our efforts.

In addition to alignment with these internal planning and reporting efforts, it is envisioned that the 2015 Strategy will also have utility as a resource and reference for performance partners and other external agencies as they plan for the future.