

OFFICE OF WATER PROGRAMS  
California State University, Sacramento



Annual Report  
2005-06

# OFFICE OF WATER PROGRAMS

California State University, Sacramento

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## ONE MILLION MANUALS AND COUNTING...

The Office of Water Programs (OWP) at California State University, Sacramento, provides training and engineering research services. OWP is a self-supporting program and employs 44 faculty, staff, and student assistants in its Training and Research groups.

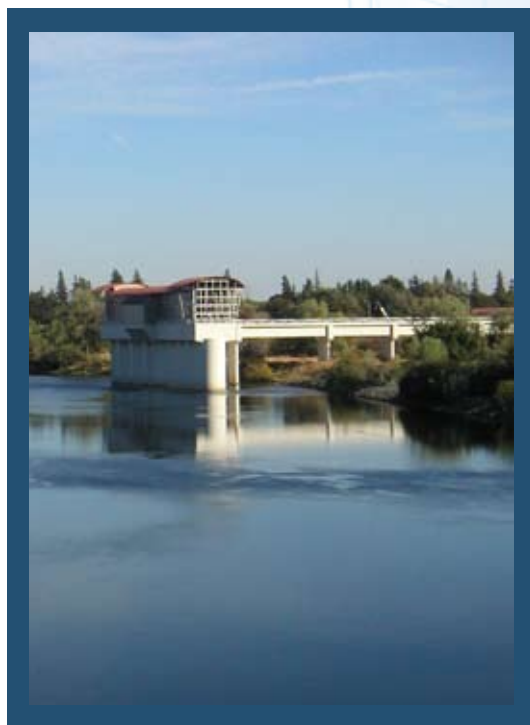
OWP continues to be a global leader in providing high-quality, low-cost training programs for operators and managers of water treatment and distribution systems; wastewater collection and treatment systems; and utility managers.

Since 1972, OWP has developed 39 training courses. Our training manuals are now available in 12 languages and are sold in 108 countries. Six hundred and forty colleges and universities purchase and use OWP materials as part of their curriculum. OWP continues to embrace new technology, and courses that were once available only by correspondence are now available on VHS and DVD, CD-ROM, and the internet. During the past year, 42,312 manuals, 487 CDs, 391 VHS and DVD sets, and 12,780 enrollments were purchased by water and wastewater operators and agencies worldwide. The revenue generated by these training programs is reinvested in our customers by keeping our materials current and by funding development of new materials and methods.

This year, OWP reached a milestone with the sale of its one millionth training manual. Our goal remains to be the premier international provider of water and wastewater operator training materials and methods.

The OWP Research Group continues to assist the California Department of Transportation (Caltrans) with stormwater research and conducted over 80 pilot studies throughout the state of California. The results of these studies have been and will continue to be applied in the design and development of stormwater erosion control and treatment best management practices.

Three distance learning courses based on the California Stormwater Quality Association's (CASQA) Stormwater Best Management Practice (BMP) handbooks are in their second year of sales. Approval of CASQA BMP on-line courses by state operator certification boards has more than doubled to a total of 24 states.



...E.A. Fairbairn Water Treatment Plant, Sacramento, California

Over one  
**MILLION**  
OWP Water  
and Wastewater  
TRAINING  
Manuals

HAVE BEEN SOLD TO  
OPERATORS

FROM **SACRAMENTO...**



## TRAINING

Developing and implementing new water quality standards and treatment technologies requires that operators and managers of wastewater and drinking water treatment plants continually update their training. This year, OWP published an updated Third Edition of Industrial Waste Treatment, Volume I, and a new Fifth Edition of Advanced Waste Treatment.

Keeping our training materials current remains a top priority for our professional staff as they participate in industry professional organizations and regulatory and certification advisory committees.

### NEW COURSES

#### WATER DISTRIBUTION SYSTEM OPERATION AND MAINTENANCE ON-LINE COURSES

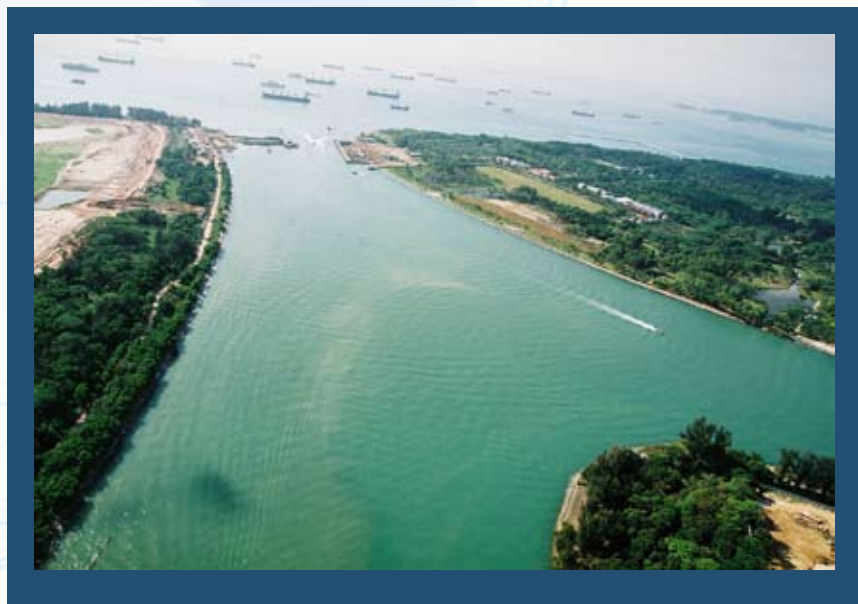
Two new courses were created to meet the training needs for water distribution system operators for the contact hours required to renew their certifications. Facilities, and Water Quality and Disinfection,

each focus on one or two major water distribution topic areas. These new courses use the same internet delivery system that has proven so successful with the Small Water System Operation and Maintenance training series released in 2002. Each course provides 18 contact hours of training credit. The last three courses in the series, O & M Activities, Safety, and System Administration, will be released in the coming year.

### CONTRACTS

#### CALIFORNIA WATER ENVIRONMENT ASSOCIATION

OWP successfully completed a 1-year contract with the California Water Environment Association (CWEA) by developing training tools for CWEA trainers to improve the quality and consistency of the training they provide to operators and technicians. OWP staff, in collaboration with the California State University, Sacramento, Center for Teaching and Learning (CTL), developed a series of seven Moderator Guides for use by CWEA trainers. OWP and CTL staff also conducted workshops for CWEA trainers in Sacramento and San Diego to complete the contract.



..... The Marina Barrage project will be Singapore's first reservoir, and will help meet 10 percent of Singapore's current water demand. (Photo courtesy of the Public Utility Board of Singapore)

## ...TO SINGAPORE

## SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT (SRCSD)

OWP continued to provide applied research under a 3-year contract with the Sacramento Regional County Sanitation District (SRCSD). OWP staff assisted with assessment and selection of appropriate technologies for treating reclaimed wastewater to meet standards for recycled water. Technologies investigated include membrane treatment, cloth filtration, and granular media filtration. The reclaimed water will be used to irrigate median landscaping, golf courses, parks, etc.

OWP also assisted SRCSD by conducting an analysis of methyl mercury contamination of watersheds tributary to the Sacramento River. The SRCSD is using the information to help formulate strategies to reduce methyl mercury contamination in the Sacramento River watershed.

## IMPLEMENTING NEW TECHNOLOGY

From its beginnings in the 1970s, OWP's customer base has grown exponentially, and keeping up with the rising demand for automation has been a constant challenge. In June of 2006, OWP transitioned to a new database program, migrating over 120,000 student records and over 2.3 million grade, enrollment, and orders records. Full implementation of this new software will greatly streamline the ordering and shipping process, resulting in customers having their phone orders shipped the same day they are placed. In 2007, OWP customers will be able to order their materials on-line via enhanced and secure web pages.

## RESEARCH

For the past eight years, OWP research engineers and scientists have assisted Caltrans in planning and managing its stormwater management program. This group, along with some Caltrans engineers, is known as the Applied Studies Team (AST). The major elements of this program are characterization monitoring, field testing of best management practices (BMPs), and source identification and control. The Research Group began a new 3-year contract in June 2005. Similar services are being provided to the El Dorado County Department of Transportation (DOT) under a 3-year contract that began in July 2004. The Research Group is also performing work for the California Stormwater Quality Association (CASQA) under a contract that began in December 2005.

## CALTRANS

### CHARACTERIZATION MONITORING

Although a major portion of the stormwater runoff characterization projects are complete, OWP continues to help Caltrans with special characterization projects to study the effectiveness of drain inlet cleaning, Areas of Special Biological Significance (ASBS), source identification, pathogens, herbicides, toxicity, California Toxics Rule (CTR) constituents, and first flush characteristics. Results of these studies have been and will continue to be applied in the design and development of stormwater erosion control and treatment best management practices.

### TREATMENT BEST MANAGEMENT PRACTICES PILOT STUDIES

The Applied Studies Team is currently conducting various stages of 80 full-scale pilot studies and various small-scale studies. The pilot studies are determining the treatment performance, life cycle costs, and maintenance requirements for the following technologies: detention basins (various operation modes and inlet/outlet structures); sand filters; alternative media (activated alumina, iron modified activated alumina, and limestone); sand traps with filter fabric; vegetated strips; bioretention facilities; porous friction course; and gross solids removal devices.

The Research Group is collaborating with the university's Chemistry Department to develop and test drain inlet inserts. The work is being performed at the Used Oil Demonstration Project testing facility located on campus.

The small-scale treatment BMP testing facility in the Lake Tahoe Basin is being used for testing various combinations of sedimentation, filtration (media and filter fabric), and chemical addition. Over 50 systems were piloted during the past year, and up to 50 systems will be piloted this coming wet season. This past year included studies on the toxicity of chemically treated stormwater as well as the stability of flocculants formed by chemically treated stormwater.

#### SOURCE CONTROL

OWP continues to collaborate with staff at the Cal Poly San Luis Obispo Erosion Research Facility. One ongoing project is enhancing a tool that specifies and calculates seed and live plant materials for transportation projects. Another project is testing the treatment performance of biostrips with ornamental vegetation. In addition, there are several new projects focused on identifying sources of contaminants found in Caltrans stormwater runoff. Other projects are focused on identifying the sources of phosphorus and some metals found in the Caltrans runoff.

#### CALTRANS—DATA MANAGEMENT, TOOL DEVELOPMENT, AND ANNUAL REPORTING

Services to Caltrans also include data management, tool development, and preparation of several annual reports. The Research Group is responsible for housing and administering the Caltrans Storm Water Library. The group is responsible for housing and administering the Caltrans Storm Water Information System (SWIS), a continuously updated database that stores all Caltrans monitoring and pilot study data.

Data management duties also include oversight, training, and enforcement of Caltrans data collection and analysis protocols. The Caltrans Monitoring Equipment Inventory, Storage, and Maintenance Program is administered by the Research Group as well. The Research Group prepared the following annual reports: the Treatment BMP Technology Report, the Storm Water Monitoring and BMP Status Report, and the Storm Water Monitoring and Research Program Annual Data Summary Report. OWP researchers are spearheading an effort to write a guidance manual for the planning, executing, and reporting stages of BMP pilot studies.

## EL DORADO COUNTY

OWP assisted with an update of the El Dorado County Department of Transportation's Design Manual, prepared several facility pollution prevention plans, and provided on-call monitoring expertise services.

## CALIFORNIA STORMWATER QUALITY ASSOCIATION (CASQA)

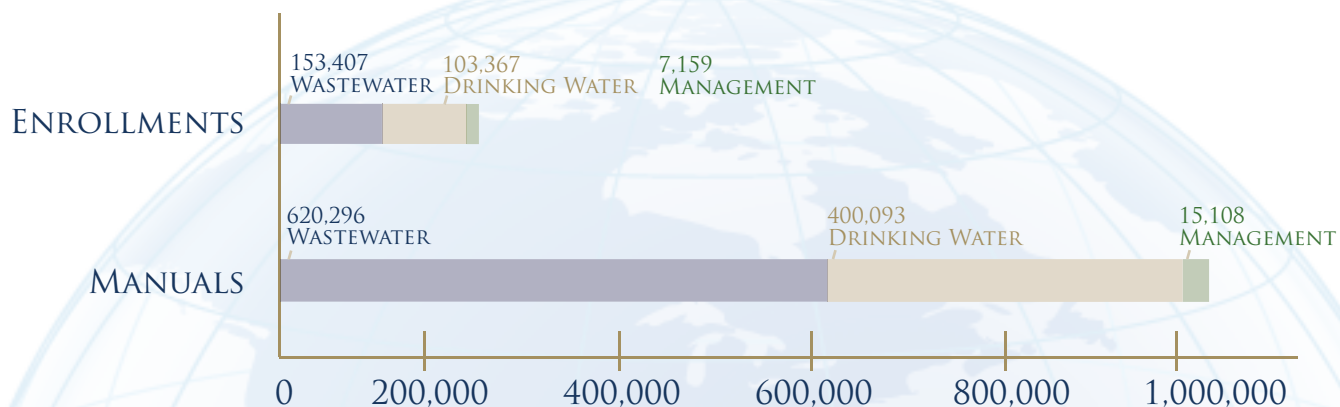
OWP is modifying its existing Basin Sizer computer program that automates the synthesis of historical rainfall data and the computation of water quality volumes and water quality flows for the design of stormwater treatment control devices in California. The program is being expanded to include CASQA methods, and rainfall data has been updated.

# APPENDIX A

## SUMMARY

Totals of 42,312 manuals and 12,780 enrollments during this fiscal year (July 1, 2005 - June 30, 2006) brought overall cumulative totals to 1,035,497 manuals sold, and 263,933 course enrollments.

### CUMULATIVE PROGRAM SUMMARY



### WASTEWATER

SMALL WASTEWATER SYSTEM OPERATION AND MAINTENANCE, VOL. I (SWWS I) (FIRST EDITION, 1997)

6,841 manuals  
3,039 enrollments

This course covers the responsibilities of the small wastewater systems operator and presents descriptions of the equipment and processes commonly used in small community wastewater systems. Other topics include how to develop a maintenance program and how to set rates.

SMALL WASTEWATER SYSTEM OPERATION AND MAINTENANCE, VOL. II (SWWS II) (FIRST EDITION, 2002)

1,726 manuals  
607 enrollments

Building on the knowledge obtained in Volume I, this course focuses on the knowledge and skills needed

to operate and maintain several types of package wastewater treatment processes. The course also describes various effluent disposal options, how to perform basic lab procedures, and how to administer a small wastewater system.

OPERATION OF WASTEWATER TREATMENT PLANTS, VOL. I (OWTP I) (FIRST EDITION, 1980; FIFTH EDITION, 2002)

202,029 manuals  
61,674 enrollments  
164 CDs

Designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants, this course emphasizes the knowledge and skills needed to operate wastewater treatment plants as efficiently as possible. Operators will gain an understanding of the basic operational aspects of their plant and learn how to analyze and solve operational problems.



OPERATION OF WASTEWATER TREATMENT PLANTS, VOL. II (OWTP II)  
(FIRST EDITION, 1980; SIXTH EDITION, 2003)

144,927 manuals  
31,654 enrollments

Continuing from Volume I, this course shifts emphasis toward larger conventional treatment plants. This course teaches good management practices, including maintenance programs, recordkeeping, using computers, and preparing and writing reports.

ADVANCED WASTE TREATMENT (AWT)  
(FIRST EDITION, 1987; FIFTH EDITION, 2006)

56,168 manuals  
13,426 enrollments

This course provides information to operators of advanced wastewater treatment plants, covering biological treatment processes as well as physical and chemical treatment processes.

TREATMENT OF METAL WASTESTREAMS (TMW)  
(FIRST EDITION, 1986; THIRD EDITION, 2003)

29,029 manuals  
8,119 enrollments

This course teaches safe and effective operation and maintenance of wastewater treatment facilities for electroplating, metal finishing, and printed circuit board manufacturing. It emphasizes how to operate and maintain facilities that neutralize acidic and basic waters, treat wastes containing metals, destroy cyanide, and also treat complex metal wastes.

INDUSTRIAL WASTE TREATMENT, VOL. I (IWT I)  
(FIRST EDITION, 1987; THIRD EDITION, 2005)

30,270 manuals  
5,418 enrollments

This course covers the importance and responsibilities of an industrial wastewater treatment plant operator. Information is provided on the importance of plant operation, waste minimization, industrial waste monitoring, physical and chemical treatment processes, treatment of metal wastestreams, instrumentation, safety, and maintenance.

INDUSTRIAL WASTE TREATMENT, VOL. II (IWT II)  
(FIRST EDITION, 1987; SECOND EDITION, 1995)

16,310 manuals  
2,206 enrollments

This course continues the emphasis from Volume I on the responsibilities of an industrial wastewater treatment plant operator, and includes information about aerobic and anaerobic treatment processes, residual solids management, and maintenance.

PRETREATMENT FACILITY INSPECTION (PFI)  
(FIRST EDITION, 1988; THIRD EDITION, 1996)

16,279 manuals  
6,364 enrollments

This course stresses the duties and responsibilities of a pretreatment facility inspector. It provides information on changes and recommendations resulting from the Domestic Sewage Study and Pretreatment Implementation Review Team, and information on how inspectors can assist and encourage industry with waste minimization programs.

PRETREATMENT FACILITY INSPECTION TRAINING VIDEOS (PFI V)  
(FIRST EDITION VIDEOS, 1998; COURSE, 2003)

1,268 VHS videos  
16 enrollments

An excellent introduction to the knowledge, skills, and abilities needed by new pretreatment facility inspectors, these five 30-minute videos portray real-world experiences and feature inspectors of industrial pretreatment facilities performing actual tasks. Current inspectors also will find helpful ideas to improve their performance.

OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS, VOL. I (COLL I)  
(FIRST EDITION, 1976; SIXTH EDITION, 2003)

66,105 manuals  
13,705 enrollments

This course provides operators with information needed to operate and maintain wastewater collection systems efficiently and effectively. Emphasis is on tasks performed by line maintenance crews. Various types of collection systems and construction inspections are covered.



OPERATION AND MAINTENANCE OF WASTE-WATER COLLECTION SYSTEMS, VOL. II (COLL II)  
(FIRST EDITION, 1976; FIFTH EDITION, 1995)

48,162 manuals  
6,948 enrollments

This course emphasizes the duties of operating and maintaining lift stations, maintenance of equipment, and sewer rehabilitation. Other topics include administration and organization for system O&M.

COLLECTION SYSTEMS: METHODS FOR EVALUATING AND IMPROVING PERFORMANCE (CSM)  
(FIRST EDITION, 1998; COURSE, 2004)

2,450 manuals  
194 enrollments

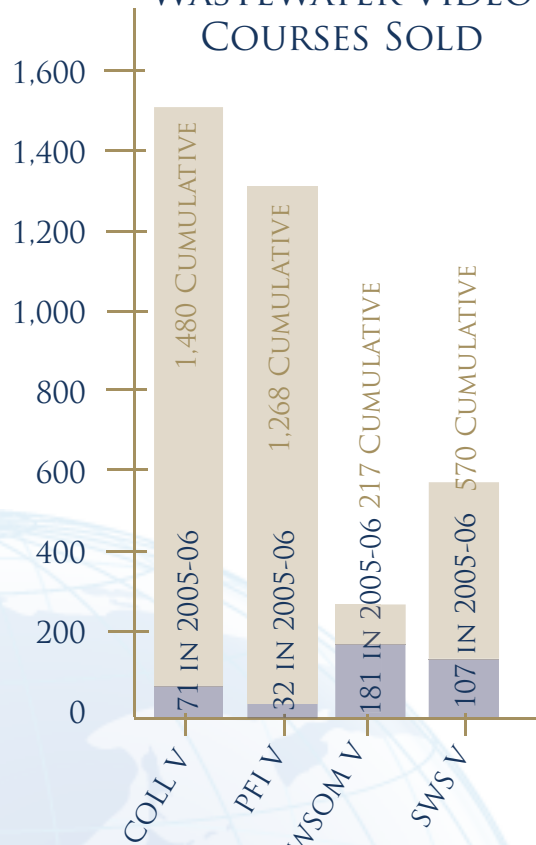
This course assists collection system agencies in evaluating the adequacy and effectiveness of their O&M program and identifying areas where improvements could be made. The course includes system and operations data from 13 highly effective collection system agencies; benchmarking procedures and worksheets; procedures for establishing an effective O&M program; procedures to identify problems and select methods for improving the performance of a collection system; and case histories showing how top-performing agencies achieve high levels of performance.

COLLECTION SYSTEM OPERATION AND MAINTENANCE TRAINING VIDEOS (COLL V)  
(FIRST EDITION, 1997; COURSE 2004)

1,480 DVD video sets  
37 enrollments

This six-part video series on one DVD is suitable for training potential, new, and experienced collection system operators to safely operate and maintain both sanitary and combined sewer systems. The videos demonstrate the equipment and procedures collection system crews use to safely and effectively operate and maintain their collection systems. Operators learn how to properly identify, solve, and record solutions to existing and potential collection system problems.

DRINKING WATER AND WASTEWATER VIDEO COURSES SOLD



DRINKING WATER

WATER TREATMENT PLANT OPERATION, VOL. I (WTPO I)  
(FIRST EDITION, 1983; FIFTH EDITION, 2004)

134,522 manuals  
43,473 enrollments

Designed to train operators in the safe and effective operation and maintenance of water treatment plants, Volume I emphasizes the knowledge and skills needed by an operator working in a conventional water treatment plant used for treating surface waters.

WATER TREATMENT PLANT OPERATION, VOL. II (WTPO II)  
(FIRST EDITION, 1983; FOURTH EDITION, 2004)

85,678 manuals  
20,121 enrollments

This continued course provides information needed by all operators responsible for the administration and management of a water treatment plant.

WATER DISTRIBUTION SYSTEM OPERATION  
AND MAINTENANCE (WDS)  
(FIRST EDITION, 1983; FIFTH EDITION, 2005)

111,794 manuals  
25,058 enrollments

This course describes the responsibilities of being an operator for water storage and distribution systems. It provides an understanding of the basic operational and maintenance concepts of water distribution systems and helps operators develop the ability to analyze and solve problems when they occur.

SMALL WATER SYSTEM OPERATION AND  
MAINTENANCE (SWS)  
(FIRST EDITION, 1983; FOURTH EDITION, 1999)

67,956 manuals  
14,340 enrollments

Designed to train operators in safe and effective operation and maintenance of small water systems and treatment plants, this course contains information for operators with responsibility for wells, pumps, disinfection, and small water treatment plants (serving populations of fewer than 10,000).

SMALL WATER SYSTEMS VIDEO INFORMATION  
SERIES (SWS V)  
(FIRST EDITION, 2001)

522 VHS video sets  
48 CD video sets  
76 learning booklets  
293 enrollments

This ten-part video series and the accompanying Learning Booklet were developed to serve the needs of the operators, managers, owners, and elected board members of very small water systems. This course presents information on the basic operation and maintenance of small groundwater and surface water supply systems and water distribution systems.

WATER SYSTEMS OPERATION AND  
MAINTENANCE VIDEO TRAINING SERIES  
(WSOM V)  
(FIRST EDITION, 2004)

105 VHS video sets  
112 DVD video sets  
67 learning booklets  
82 enrollments

This seven-part video series and accompanying Learning Booklet covers several different topics presented by working operators, engineers, or managers who are experts in their field. The videos all feature real operators performing duties at their facilities.

## MANAGEMENT

UTILITY MANAGEMENT (UM)  
(FIRST EDITION, 1998; SECOND EDITION, 2004)

14,204 manuals  
6,706 enrollments

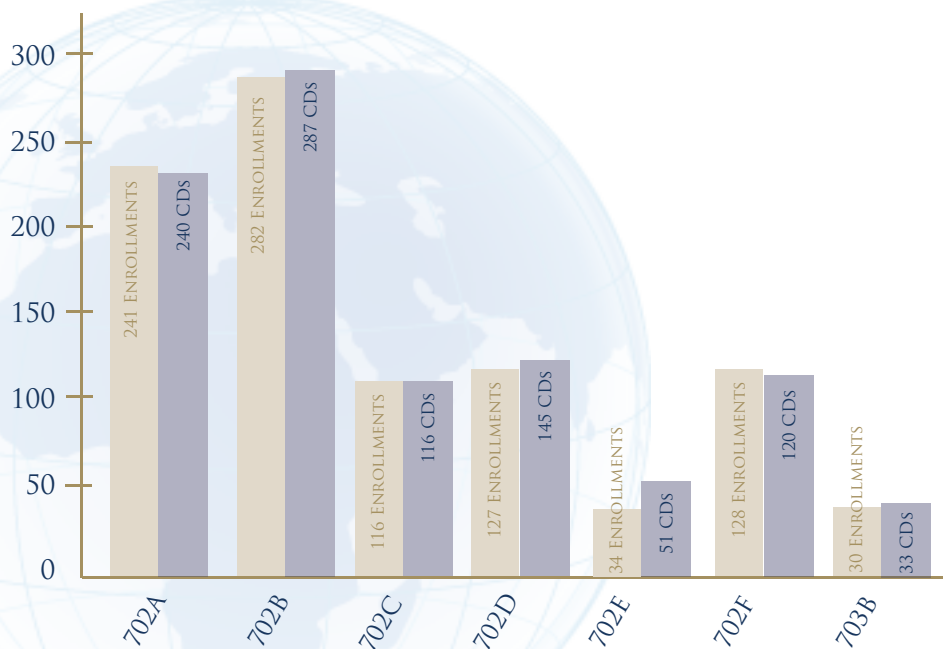
This course offers detailed information regarding all major responsibilities of a utility manager's key job elements and provides practical guidelines for policies and procedures. Explanations are given on how to assess the financial strength and stability of a utility, principles of budgeting, and how to fund capital improvements.

MANAGE FOR SUCCESS—EFFECTIVE UTILITY  
LEADERSHIP PRACTICES (MFS)  
(FIRST EDITION, 2005)

904 manuals  
453 enrollments

Utilities can help ensure their management capacity by having their management personnel complete this training program. The program stresses problem identification and solutions, teamwork, communication, motivation, and evaluating and improving solutions to problems.

## ON-LINE COURSES 2005-06



### ON-LINE COURSES

These distance learning courses are delivered over the internet, and include lessons, readings, video clips, animated illustrations, student exercises, and on-line exams. The readings, student exercises, and video clips are contained on a companion CD that integrates with the on-line materials.

### SMALL WATER SYSTEMS

#### WAT 702A—WATER SOURCES AND TREATMENT (FIRST EDITION, 2003)

241 enrollments  
240 CDs

Topics include: water supply system components; operator responsibilities; certification requirements; hydrologic cycle; sanitary survey methods; regulatory website information; treatment system components; and relevant math solution techniques.

#### WAT 702B—WELLS (FIRST EDITION, 2003)

282 enrollments  
287 CDs

Topics include: wellhead protection; well and pump system components; maintenance; pump and tank operation; inspection; disinfection; recordkeeping; sand removal; troubleshooting; site selection; evaluation and testing; drilling methods; and well plugging.

#### WAT 702C—SMALL WATER TREATMENT PLANTS (FIRST EDITION, 2003)

116 enrollments  
116 CDs

Topics include: treatment requirements and methods for surface and groundwaters; coagulation; flocculation; sedimentation; filtration; disinfection; corrosion control; solids-contact clarification; sand filters; mineral removal; maintenance; and safety.

#### WAT 702D—DISINFECTION (FIRST EDITION, 2003)

127 enrollments  
145 CDs

Topics include: regulations; effectiveness; physical and chemical methods; applicability of disinfection to various types of equipment; chlorination rates; chlorine residual measurement; safety; and relevant math solution techniques.

WAT 702E–WATER RATES/SAFETY  
(FIRST EDITION, 2004)

34 enrollments  
51 CDs

Topics include: safety program implementation; equipment use; safe practices; lockout/tagout procedures; inspections; and water rate determination, calculation, and administration.

WAT 702F–LABORATORY  
(FIRST EDITION, 2004)

128 enrollments  
120 CDs

Topics include: basic laboratory analysis procedures and equipment; sampling techniques and devices; tests (alkalinity, hardness, coliform bacteria counts, jar tests, and others); and relevant math solution techniques.

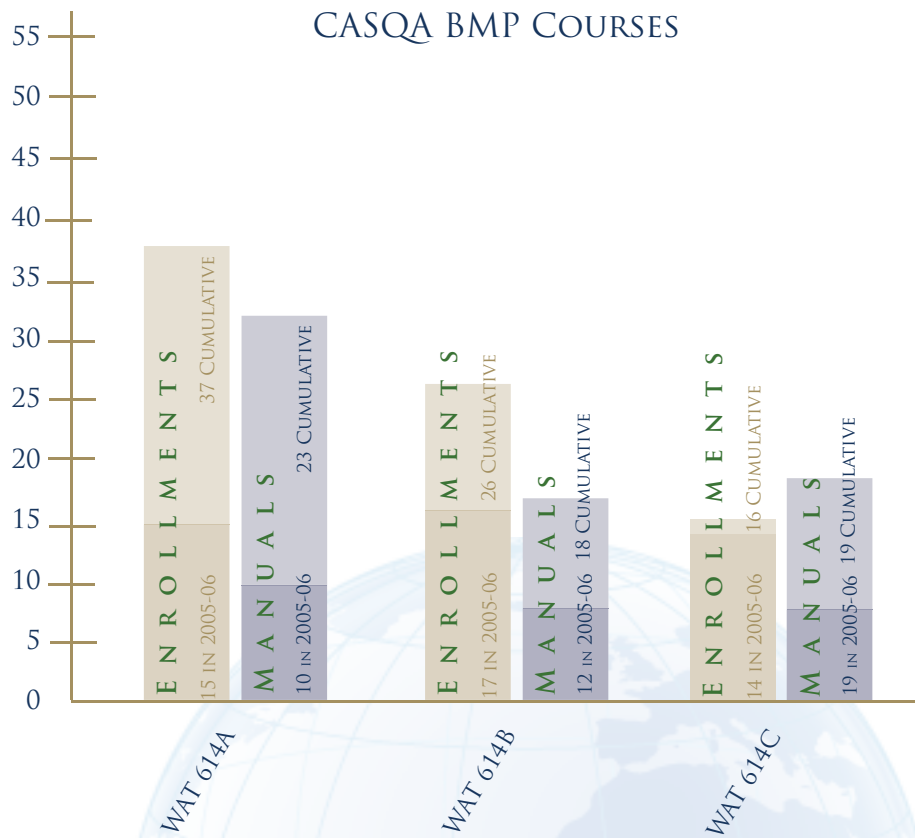
## WATER DISTRIBUTION SYSTEMS

WAT 703B–FACILITIES  
(FIRST EDITION, 2006)

30 enrollments  
33 CDs

This course covers water storage facilities and water distribution system facilities. Topics for water storage facilities include: types; locations; safe operation and maintenance; inspections; troubleshooting; disinfection; corrosion protection; and maintaining records. The topics covered for water distribution system facilities include: purpose; importance of hydraulics; storage and pumping facilities; types of pipes and joints; and installing pipe, meters, and backflow prevention devices.





### CASQA BMP COURSES

These distance learning courses are based on the California Stormwater Quality Association's (CASQA) Stormwater Best Management Practice (BMP) handbooks. These courses are designed to provide continuing education for professional engineers, employees of municipal agencies, regulatory agencies, developers, construction companies, and others to increase their knowledge of stormwater best management practices.

#### WAT 614A—New Development and Redevelopment (First Edition, 2004)

37 enrollments  
23 manuals

This course provides general guidance for selecting and implementing BMPs to reduce pollutants in runoff in newly developed areas and redeveloped areas to waters of the state. Topics covered include: planning for new development and redevelopment; site and facility design for water quality protection; source control BMPs; treatment control BMPs; and long-term maintenance of BMPs.

#### WAT 614B—Construction (First Edition, 2004)

26 enrollments  
18 manuals

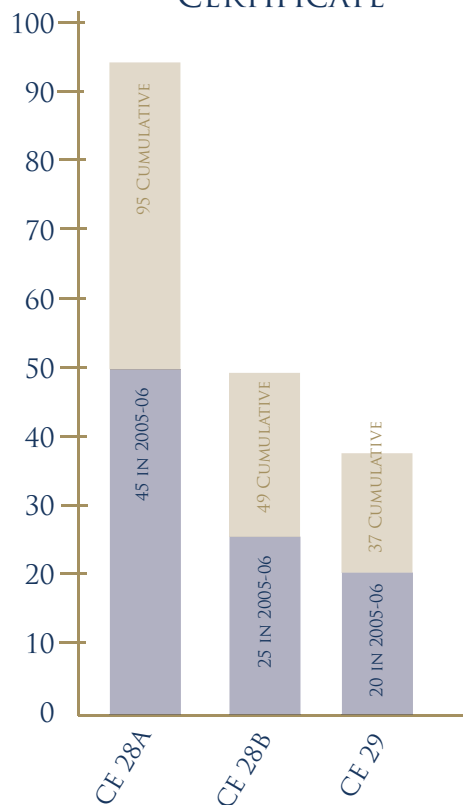
This course provides guidance on developing and implementing stormwater pollution prevention plans that document the selection and implementation of BMPs for particular types of construction projects.

#### WAT 614C—Municipal (First Edition, 2004)

16 enrollments  
19 manuals

This course provides general guidance for selecting and implementing BMPs to reduce pollutants in runoff from municipal operations to waters of the state. Topics covered include: regulatory requirements; pollution prevention planning; source control BMPs; treatment control BMPs; and long-term maintenance of BMPs.

## WATER TREATMENT PLANT OPERATION SPECIALIST CERTIFICATE



### WATER TREATMENT PLANT OPERATION SPECIALIST CERTIFICATE PROGRAM

The Water Treatment Plant Operation Specialist Certificate Program is designed to prepare students for beginning a successful career in the drinking water industry. Students will earn 18 units of university credit and a certificate of academic achievement for completing the three program courses.

#### CE 28A–Water Treatment Plant Operation I (First Edition, 2002)

95 enrollments

This introductory course provides an overview of the need for water treatment, the importance of providing safe water for the public, and the theory and operation of conventional water treatment plant processes. Emphasis is placed on developing knowledge and skills needed by an operator working in a conventional water treatment plant treating surface water.

#### CE 28B–Water Treatment Plant Operation II (First Edition, 2002)

49 enrollments

Building on the knowledge obtained in CE 28A, this second course introduces advanced information on the theory and operation of conventional water treatment plant processes. In addition, the more advanced processes including iron and manganese control, fluoridation, softening, trihalomethane prevention, demineralization, and handling and disposal of process wastes are presented. Emphasis is placed on developing advanced knowledge and skills needed by an operator working in a conventional water treatment plant treating surface water, including instrumentation, safety, advanced laboratory procedures, water quality regulation, and administration.

#### CE 29–Small Water System Operation and Maintenance (First Edition, 2002)

37 enrollments

This course is designed to train operators in the practical aspects of operating and maintaining small drinking water supply and treatment systems, with emphasis on the use of safe practices and procedures. Topics include the role and duties of small system operators; water sources and treatment processes; operation and maintenance procedures for small water treatment plants; disinfection; safety; laboratory procedures; setting water rates; and how to solve water treatment plant math problems. Detailed descriptions of the components of a drinking water well are presented, and operators will learn how to set up a wellhead protection program; operate, maintain and rehabilitate wells; disinfect wells and pumps; and troubleshoot operating problems.



### Key to Abbreviations

AWT	Advanced Waste Treatment
COLL I	Operation and Maintenance of Wastewater Collection Systems, Vol. I
COLL II	Operation and Maintenance of Wastewater Collection Systems, Vol. II
CSM	Collection Systems: Methods for Evaluating and Improving Performance
IWT I	Industrial Waste Treatment, Vol. I
IWT II	Industrial Waste Treatment, Vol. II
MFS	Manage for Success
OWTP I	Operation of Wastewater Treatment Plants, Vol. I
OWTP II	Operation of Wastewater Treatment Plants, Vol. II
PFI	Pretreatment Facility Inspection
SWS	Small Water System Operation and Maintenance
SWS LB	Small Water System Operation and Maintenance Learning Booklet
SWWS I	Small Wastewater System Operation and Maintenance, Vol. I
SWWS II	Small Wastewater System Operation and Maintenance, Vol. II
TMW	Treatment of Metal Wastestreams
UM	Utility Management
WDS	Water Distribution System Operation and Maintenance
WTPO I	Water Treatment Plant Operation, Vol. I
WTPO II	Water Treatment Plant Operation, Vol. II
WSOM LB	Water Systems Operation and Maintenance Learning Booklet

# APPENDIX B

## PRESENTATIONS AND PUBLICATIONS

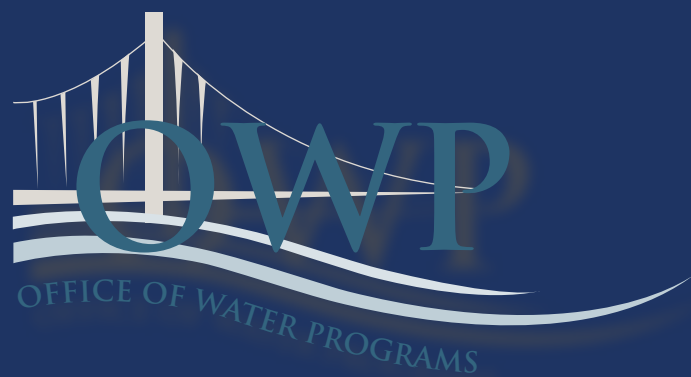
### PRESENTATIONS

- Curto, Mike, Brent Hallock, and **Misty Scharff**, "A Database Application and Calculator for California Highway Revegetation Specifications," Transportation Research Board (TRB) Committee TRB AFB60, Hydrology, Hydraulics and Water Quality Conference, Sanibel Island, FL, July 11-13, 2005.
- Hallock, Brent, and **Misty Scharff**, "Principles and Practices for Using Vegetation to Prevent Erosion," International Erosion Control Association (IECA), Conference 37, Long Beach, CA, February 20–23, 2006.
- Hallock, Brent, and **Misty Scharff**, "A Comparative Analysis of Compost Treatments to Establish Native Shrubs and Improve Water Quality," International Erosion Control Association (IECA), Conference 37, Long Beach, CA, February 20–23, 2006.
- Kerri, Ken**, "Activated Sludge Workshop," State of Baja California Public Services Commission of Tijuana (Comisión Estatal de Servicios Públicos de Tijuana (CESPT)) and California State Water Resources Control Board (SWRCB), Rosarito Beach, B.C., Mexico, November 16-17, 2005.
- Ohlinger, Kurt**, "Overview of Office of Water Programs," Quarterly Meeting, City of Sacramento, Department of Utilities, Sacramento, CA, April 7, 2006.
- Scharff, Misty**, and **David Alderete**, "Design, Construction and Vegetation Selection of a Bioretention Area to Treat Storm Water Runoff," International Erosion Control Association (IECA), Conference 37, Long Beach, CA, February 20–23, 2006.
- Sobelman, Timothy, **David Alderete**, James Sullivan, and Forest McMasters, "Evolution of Trash Management for Caltrans Freeways," Plastic Debris: Rivers to Sea Conference, Redondo Beach, CA, September 7-9, 2005.

### PUBLICATIONS

- Patel, Dipen**, Jeffrey Hauser, John Johnston, and Jeffry Curtis, "Pilot Filtration Studies for Turbidity and Nutrient Removal at Lake Tahoe." *Journal of the Nevada Water Resources Association*, 2 (1): 8-14.





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