

## **LESLIE A. MARTIEN**

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### **PROJECT ENGINEER AND WATER RESOURCES ANALYST**

Aquacraft, Inc.  
Water Engineering and Management  
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### **WORK EXPERIENCE**

**Project Engineer and Analyst**, Aquacraft, Inc. Water Engineering and Management

2002 – Present

Leslie Martien joined Aquacraft in 2002 after completing her Bachelor of Science in Water Resources and Environmental Engineering at the University of Colorado. Her work with Aquacraft includes analysis of flow trace data, evaluation of conservation programs, analysis of data using Excel and Access databases, and report and grant writing. She is on the Colorado WaterWise Annual Event committee and is an editor for the Colorado WaterWise newsletter. She continues her association with the University of Colorado as a guest speaker and as an industry representative for the High School Honors Institute.

### **EDUCATION**

**Bachelor of Science**, 2002, Water Resources and Environmental Engineering, Department of Civil, Architectural and Environmental Engineering, University of Colorado, Boulder, Colorado

### **AFFILIATIONS**

Colorado WaterWise, AWWA, High School Honors Institute – University of Colorado, Boulder

### **SELECTED PROJECTS**

#### **Evaluation of the Impacts of Weather Based Irrigation Controllers on Water Use in Castaic Lake Water Agency**

Leslie worked on the analysis of the changes of outdoor water use for the study group and control groups for the Castaic Lake study. She determined the gross and weather corrected changes pre and post installation, and determined how the use of weather based irrigation controllers changed the water use in the study group in comparison to the overall changes to the water use of the population, as measured by the control group. She drafted the report and presented the results at the WaterSmart Innovations Conference in 2015.

#### **Residential End Uses of Water Study – Abu Dhabi**

Leslie was the main analyst of the flow trace data for the Abu Dhabi study. She also assisted with landscape analyses and statistical reporting on the results of the study. She worked on the report writing and editing.

#### **Residential End Uses of Water Study Update**

This study is an investigation of water use patterns in residential housing across the US and Canada. Funded by the Water Research Foundation, the Alliance for Water Efficiency, and a

consortium of nine water utilities, this research expands on the seminal 1999 Residential End Uses of Water study conducted by Aquacraft.

**Analysis of Water Use in New Single Family Homes (2011)**

This long awaited major field study of where and how much water is used in new homes in the US has found that building to the WaterSense specification results in 19.4% water savings indoors vs. standard new homes built over the past few years. The Analysis of Water Use in New Single Family Homes study was conducted by a team lead by Aquacraft, Inc. and funded by a consortium of nine water utilities and by a grant from the US EPA.

**Albuquerque Single-Family Water Efficiency and Retrofit Study (2009-present)**

The Albuquerque Bernalillo County Water Utility Authority (Water Authority) was awarded the American Recovery and Reinvestment Act (ARRA) of 2009 Green Project Reserve funding through a Drinking Water Revolving Loan for contract work on the Albuquerque Single-family Water Use Efficiency and Retrofit Study. The goal of this study was to obtain a detailed analysis on the indoor and outdoor water use patterns of a random sample of single-family homes in the Water Authority's service area. This information is intended to show how much water was used in the homes for each of the major domestic end-uses. In addition, several types of efficiency data were obtained for indoor use such as the average gallons per flush for toilets, the flow rates for showers and faucets, and the gallons per load for clothes washers.

**Contact: Mr. Frank Roth (505) 768-2511**

**NCWCD Survey Project (2010)**

The Northern Colorado Water Conservancy District (Northern Water) is required to file a conservation plan with the U.S. Bureau of Reclamation every five years. Northern Water wished to survey its municipal customers to determine what water conservation activities are currently being undertaken and what support for water conservation these water providers would like to receive from Northern Water. Aquacraft assisted Northern Water with the development of the 2009 Water Conservation Plan update. This effort included design and implementation of a detailed water conservation survey, analysis of the survey results and provision of the response data, and review and assistance in the development of the conservation plan document.

**Contact: Esther Vincent (970) 532-7700**

**Best Practices Guide for Colorado Water Conservation (2009-present)**

Colorado Water Wise contracted with Aquacraft to research and produce a guidebook on water conservation best practices for Colorado. The guide will be published in 2010.

**Contact: Ms. Brenda O'Brien (303) 973-4026**

**EPA New Home Water Use Study (2006-2010)**

This was a nationwide study of water use patterns in new single family homes funded by the U.S. EPA and 8 water agencies: Tampa and Jacksonville, FL; Phoenix, AZ; Eugene, OR; Roseville, CA; Salt Lake City, UT; Denver and Aurora, CO; Southern Nevada Water Authority (Las Vegas, NV). Using the data logger/survey approach the water use in these new homes was analyzed in detail to determine the factors that affect water use in new homes. In addition a group of high efficiency homes were built in order to demonstrate the impacts of use of best available technology in new home construction.

**Alexander Dawson Water Efficiency Survey (2008)**

Alexander Dawson School sought to develop a water conservation plan that would allow them to increase the students served by 60% over a ten-year period without a proportionate increase in the potable water use. Aquacraft, Inc. was contracted to perform an audit of the existing water use on campus and to develop a plan for reducing the per student water use to the degree feasible through use of the currently available water conserving technologies.

**Contact: Patti Leslie: Business Manager and CFO (303) 665-6679**

**Water Analysis for Libraries in the City and County of Denver (2007-2008)**

The primary goal of the project was to examine both indoor and irrigation water use at 22 Denver libraries to determine what cost-effective water conservation measures could be successfully employed to reduce demand and waste. Potential water savings were projected for each site as well as for the 22 libraries as a whole. Water conservation measures were examined to determine any negative or limiting factors that could be associated as well as any potential problems that might occur through equipment or process changes.

**Contact: Cindy Moe (303) 628-6009**

**Analysis of Penetration Rates of High Efficiency Fixtures and Appliance, Seattle (2004)**

In order to determine the natural penetration rates of high efficiency fixtures and appliances by its customers the Seattle Water Department hired Aquacraft to perform an analysis of 100 single family residences chosen at random from its billing database. These homes were data logged and their water use was disaggregated. The percentages of homes with ULF toilets (flushes less than 1.6 gpf), high efficiency showerhead (flow rates less than 2.5 gpm), and clothes washers (less than 30 gal/load) were determined. These were compared to the results obtained when Seattle participated in the REUWS in 1998. The changes in percentages over time were used to quantify the nature penetration rates of these devices over time.

**EPA Water Efficiency Market Enhancement Program (2004 – 2005)**

Working with D&R International and ERG, Aquacraft assisted in the design of the market enhancement program (aka “Water Star”), and played a key role in evaluating products and product categories that could receive an efficiency label. Aquacraft developed a web-based database for this project that has been used by the project team and EPA to collect and track information on efficient products and categories.

**Contact: Mr. John Flowers, US EPA (202) 564-0624**

**AwwaRF Value of Water Study (2003)**

Working with Stratus Consulting, Aquacraft developed case studies and provided end use information for the Value of Water Study, funded by the American Water Works Association Research Foundation.

**Contact: Mr. Robert Raucher, Stratus Consulting (303) 381-8000**

**University of Colorado – Student Housing Performance Contract (2003)**

Working with the Brendle Group and the Siemens Corporation, Aquacraft conducted an investment grade audit of irrigation systems on the CU Boulder campus and provided technical support for interior retrofit audits. Numerous facility improvement measures were identified that should greatly improve irrigation efficiency at CU.

**Contact: Ms. Judy Dorsey, the Brendle Group (970) 207-0058**

**Colorado Department of Human Services Water Rights Study (2003)**

The Department of Human Services has been charged with achieving a 20% reduction of all utilities in the current fiscal year. Aquacraft is working in association with Long Energy to determine the water rights available to DHS and the most efficient use and distribution of their water resources.

**Contact: Mr. Dave Piatek (303) 866-7297**

**Prospect Ridge Best Available Technology Study (2002)**

Aquacraft developed a water use model for the Prospect Ridge development in the Town of Bennett, Colorado. The model shows the reduction in water use that can be achieved through the use of best available technologies for water conservation in domestic and landscaping water management.

**Contact: Mr. Carmine Iadarola (303) 932-6190**

**KGNU Weather Trak Study (2002)**

The current drought has raised the question of whether or not the use of WeatherTrak satellite controlled irrigation is effective at reducing outdoor water consumption. In addition, this study was used to determine whether or not a Xeriscape landscape could be established under drought conditions with watering restrictions in effect.

**Contact: Mr. Jim Knopf (303) 494-8766**

**PUBLICATIONS:**

Martien, L.A. Meeting Water Demand in the Kingdom of Jordan, Colorado WaterWise Newsletter, March 2012

Martien, L.A. A Journey through Time, Colorado WaterWise Newsletter, March 2012

Martien, L.A. A book review, The Big Thirst: The Secret Life and Turbulent Future of Water, Colorado WaterWise Newsletter, June 2012

Martien, L.A. An Interview with Esther Vincent from Northern Water, Colorado WaterWise Newsletter, September 2012

Martien, L.A. Excerpts from "Insights into Declining Single-Family Residential Water Demand", Colorado WaterWise Newsletter, September 2012

Martien, L.A. High Efficiency Fixture and Appliance Replacement, Best Practice #12, Colorado WaterWise Newsletter, December 2011

Martien, L.A. Colorado's State Tree, *Picea pungens glauca*, Colorado WaterWise Newsletter, December 2011

Martien, L.A. Water Efficient Design, Installation, and Maintenance: Practices for Landscapes – the Need for Adaptable Landscapes, Colorado WaterWise Newsletter, September 2011

Martien, L.A. An Interview with Mark Fusco, Green Roof Expert, Colorado WaterWise Newsletter, June 2011.

Martien, L.A. Butterfly Weed, Asclepias Tuberosa, Colorado WaterWise Newsletter, June 2011.

Martien, L.A. Amelanchier: A Tough Beauty for the Spring Landscape. Colorado WaterWise Newsletter, March 2011.

Martien, L.A. An Interview with Brenda O'Brien of GreenCo and Colorado WaterWise. Colorado WaterWise Newsletter, March 2011.

Martien, L.A. What Can We Learn from FEMA? Colorado WaterWise Newsletter, March 2011.