Water Talks: Water Conservation Series Part 2
Water Conservation 101: Inside and Outside
California Trout and City of Mt. Shasta
Sisson Museum, 1 North Old Stage Road, Mount Shasta, CA 96067
May 21st, 2015 6 to 8 pm
Meeting Notes

Join local and regional experts to learn about innovative ways to improve your water use efficiency both inside and outside of your residence or business.

Introduction given by Meadow Fitton, facilitator of Water Talks Program for CalTrout. A high percentage of newcomers to the Water Talks Program was identified in the audience, as well as a number of people who attended the last Water Talk.

Water Talks Program is an ongoing program by CalTrout to provide information on water related topics. There have been 84 volunteers, including regional and local experts, making this program possible for the community.

The long term goal is to increase informed participation in water policy by providing a place for community members to interact and learn about water related topics.
Format: 6:00-8:00 pm without breaks. Introduction, presentations, then questions.
Audience will have an opportunity to interact with the presenters after the program.
This is the second program in the water conservation series. Main question for the series is how can Mt. Shasta and the surrounding areas conserve water and be prepared for an extended drought.

This series is co-sponsored by the City of Mt. Shasta and is funded by a grant from the Department of Water Resources (DWR) under proposition 84. The City is working on two projects which Paul Reuter of PACE Engineering will explain and CalTrout is assisting with the education portion of those projects. Tonight we are hoping the audience will learn where to go for drought information http://droughtmonitor.unl.edu/ and water conservation tips and information. This presentation and all presentations will be available on the City's website http://www.mtshastaca.gov/publicworks/conservation.php. The state is running a Save Our Water Program and the website http://saveourwater.com/ contains information regarding what to do inside and outside of your home to conserve water.
The main point of this presentation is to familiarize people with leak detection in residences and businesses as well as water conservation techniques including water catchment, gray water systems, efficient irrigation and native plants and food plants.

The City's water infrastructure video was played:
“Get to Know Your Water Supply”
https://www.youtube.com/watch?v=Mecj-p31F7M
The water supply of the City of Mt. Shasta is reliant on natural precipitation. Cold Springs is the main water source for the City. Cold Springs consists of the springs, four storage tanks

(combined capacity of 1.7 million gallons), two wells, supply line, distribution pipes, and a SCADA System. Cold Springs is located at the top of McCloud Avenue and is gravity fed. It is a young spring, as a result, it is highly influenced by weather patterns. On average the springs pump 2,000 gallons per minute which usually meets the City's needs though it requires supplement in peak seasons. The Quail Hill storage site consists of three tanks with a combined capacity of 1.2 million gallons of storage. Quail Hill is also fed by Cold Springs.
The distribution system currently consists of 35 miles of 1-12 inch pipelines. There are four pressure zones and two wells. Well one is the City's primary well and pumps 850-900 gallons per minute. Well one and two are typically used in the summertime to supplement the spring production. Last year, spring production was the lowest it's been in 20 years. Wells one and two had to run 12-18 hours per day to keep up with demand. Mt. Shasta's water usage in the peak summer months averages at 900 gallons per person per day. While Mt. Shasta has a generally reliable water source, the supply is not unlimited.

Updates from Shawn Powell and Paul Reuter:

Shawn Powell- Public Works Supervisor for the City of Mt. Shasta
The City has been closely monitoring spring production. There was some unexpected but very helpful rain received lately and spring production is starting to pick up towards the 1,500 gallons per minute, which is still well below average for this time of year, and still below all of 2014, which was the lowest spring production in 23 years. Powell reviewed the Emergency Drought Condition Water Reduction Policy, Resolution No. CCR-15-16 passed by City Council regarding water conservation, effective June 1st, 2015. The resolution prohibits watering between 8:00 a.m. and 8:00 p.m. and washing cars without a nozzle with a shutoff, and provides regulations on which days each address can water, among other restrictions. The Public Works crew has been working closely with the Police Department and Fire Department to notify citizens of these restrictions. Additional information can be found on the City's website: http://www.ci.mt-shasta.ca.us

Paul Reuter- Engineer for the City of Mt. Shasta, PACE Engineering
The City obtained a couple grants through the Department of Water Resources to add water meters to all the services in town and to replace a section of the supply pipeline. They were designed and bid a couple months ago. The water meter contract was awarded to Whitehawk Construction, who has started two weeks ago and have installed approximately 260 to date. Focus has been on the subdivisions west of the high school and they will continue on Shasta and Rockfellow and work south.
The supply line project was awarded to RTA Construction. They have begun painting along McCloud Avenue to locate underground utilities, and will begin potholing those utilities soon to identify any conflicts with the water line. June 1st they will start trenching the pipeline.

Question and Answer Period:

There was a question regarding the reason for the replacement of the supply line. Reuter stated that it is the oldest piece of infrastructure in the City, at over 80 years old. It is made of spiral

bound pipe, which has not been made for some time and the line is relatively inaccessible and has periodic leaks which are difficult to fix as they can't get equipment in.
An audience member indicated his water meter went in two weeks ago and he was since able to identify and fix a leak that was in his system due to the new meter. The amount of water he would have lost in a year with the leak is 200,000 gallons.
The question was asked if it is okay to open and read the meters on a daily basis. Reuter stated that it was encouraged.

Presentations:

Dylan Coleman- Wonderland Water Systems
Biography- Has been a building and landscape contractor for 15 years. The last seven years he has specialized in rain catchment systems, wastewater recycling and innovative irrigation concepts. He is also co-founder of Save the Rain, a local non-profit that teaches water-starved communities in East Africa to build rain catchment systems that provide a sustainable clean water supply.

Rainwater Catchment and Greywater Systems
Coleman shared a quote from an Ugandan worker: "God must think we are crazy, we let the rain fall off our roofs, onto the soil, it washes the soil away and goes to the bottom of the hill. We then climb down the hill and carry it back up to drink it."
He showed an image indicating the potential water supply issues by 2015. He stated that agriculture makes up 80% of water use in California. The average household water use in America is 180 gallons per person per day. The average for the City of Mt. Shasta in the summer is 900 gallons per person per day. He reviewed the available indoor conservation products including duel flush toilets, flow reducing valves, solar thermal water heaters and on-demand water heaters.
For rain catchment system, one inch of rain over an area of 1,000 square feet creates a harvest of 600 gallons of water. He reviewed some benefits of collecting rain water including: having a self sufficient water supply, protecting property investment, a cost effective alternative source of water, reduces the demand on the water shed, helps to replenish the watershed, filtered rainwater is soft water with low mineral content, unfiltered rainwater is preferred by plants and trees over most well water and municipal water sources, reduces erosion, flooding and pollution caused by runoff, filtered rainwater costs substantially less than bottled water, water storage for fire protection, tax credits and rebate programs available in many areas.
Coleman reviewed the idea of slowing water down to allow it to infiltrate the soil, which, on a larger scale would raise water tables and make seasonal creeks year-round. He stated small dams yield more than large dams and becomes exponential in drought years. He reviewed and provided examples of a number of water saving infrastructure techniques including planter boxes and residences with built-in cisterns. For commercial applications, cisterns have been built in to the design to help regulate temperature.

Coleman reviewed a 2013 plumbing code, which allows for use of gray water without permitting unless a municipality addresses it specifically. He stated the City of Mt. Shasta had not yet addressed it due to a lack of interest from citizens.

Shawn Powell- City of Mt. Shasta Public Works Supervisor
Biography- Powell started his career in water works with California State Parks on Angel Island. There he operated a small water system and assisted in collections and wastewater treatment. He then moved on to Montara Water and Sanitary District as a Water Systems Operator before accepting the job in Mount Shasta.

Leak detection and repair
Powell reviewed the impacts of leaks, stating that depending on water pressure, a leaking toilet can equate to 21,600 gallons per month, a stuck icemaker can leak 86,400 gallons per month, and a 1/2 inch hole in a pipe can leak 1,827,000 gallons per month.
Powell stated the water meter rates were undecided as of yet. He stated that a water leak could be detected by sound (a hissing, whooshing, or rumbling), or visual (mold, mildew, damp or wet spots, though you can still have a leak even if there is no visual or audio indicators.
He reviewed the different types of pipes and fittings available and repair techniques. He stated that the appropriate time to call a plumber is based on your skill and comfort level. A leak is the City's responsibility only if the main breaks, stating every one should have their own separate shut off from the City's main because if a homeowner breaks it, they have to pay for it. If the City breaks it, the City will fix it. A toilet leak can be detected by putting dye in the top tank overnight, if the dye is in the bowl in the morning, there is a leak.

Jay Carez- Healthy Gardens
Biography- Horticulturalist, farmer, educator, and environmentalist. He has taken college courses in horticulture and culinary arts. Jay's passion for farming led him to volunteer on farms in Santa Cruz, Thailand, India, Maui and the Big Island of Hawaii. These experiences helped solidify the desire to engage in Agriculture, and the communities that work with the land. He moved up to Mt. Shasta in 2005 with his wife Cynthia where he started his Agricultural career. Launching a Greenhouse company with his wife Cynthia while also being a landscape contractor, being part of a large Ranch start up called Belcampo and now delving into property management / local sustenance projects. His passion is creating good food and on the way trying to increase the overall health of the environment around us.

Soil Health and Efficient Irrigation
Carez discussed soil health and efficient irrigation- how to keep fertile land with minimal water. Organic matter incorporated into the soil is achieved with the application of good compost. He explained and demonstrated t-tape, available at Dripworks http://www.dripworks.com/ in Willits, CA., which he stated was an efficient and cost effective means of watering. He explained the importance of pulsing an irrigation system, which allows for less runoff than overhead spray watering, and better penetration of the water. He also stated that the arc of an overhead

watering system is key in managing water use as too much arc creates water overspray. He suggests a 360-degree adjustable head.

Julie Joki- Certified Master Gardener
Biography- Has been instructing university students for over 20 years. She has a Master's degree and a passion for permaculture. Julie works to share her knowledge about growing, harvesting, and preserving healthy food and encourages everyone to have at least a small vegetable garden. She is a certified Master Gardener and a member of the Yreka Community Gardens.

Growing Food in a Dry Climate
Joki stated planning your garden is extremely important. In commercial production, one head of broccoli requires 5.5 gallons of water, and one walnut requires 5-9 gallons. Joki reviewed different types of raised gardens, including straw hay bail gardens which conserves water, cinder block gardens, and a keyhole garden which allows composting in the middle.
Proper soil and bed preparation contains nutrients, holds moisture, and allows for air movement. Mulching the top of the soil retains moisture. She reviewed a list of drought resistant vegetable choices. Joki explained that raised beds should be no more than four feet across so you can access all of the plants, that plants should be planted in clusters, not in rows, and to group plants based on water needs. Joki explained the technique of training plants, indicating that roots always seek the water source. In her own garden, she uses a drought stick, a device made of pvc piping, with holes drilled in it, that deposits the water further down in the soil. She also stated that by mid-August, gardens need less water.

Leslie Tift- Native Plants Specialist
Biography- Field biologist specializing in Ornithology and Botany. Teacher with a bachelors degree in Wildlife Biology. She has taught for over 20 years in the school systems. She has had a lot of community involvement doing Native plant restoration at Sisson Meadow, Lake Siskiyou Trail, Panther Meadow Restoration, and others. TIft has taught over 20 years on how to propagate native plants and the importance of native plant re-introduction.

Native Plants Landscaping
Tift stated she has been propagating native seeds and cuttings for over 20 years and her yard contains over 60 native species, which requires very little maintenance or water to sustain it. Native plants are important because they improve soil, attract pollinators, attract wildlife, and increases biodiversity vital to the web of life. There are over 30 species of bumblebees in the western United States and over 1,000 species of honeybee in California. Honeybees were introduced and bumblebees are native, the bumblebee being the more effective pollinator of the two. Bumblebees are declining due to the lack of native plants in the area and herbicides. Root systems of native plants, such as bunch grasses, can grow up to a mile long, which adds nutrients, aeration, and provides erosion control. She stated native plants are low cost, low maintenance, require no fertilization, no herbicides, increase biodiversity, and are wildlife resistant. Native shrubs provide food, shelter, and nesting materials for wildlife.

Water Talks Notes
May 21, 2015

To begin planting native plants, you must consider type; dry and course or wetland, sun, shade, or partial shade are all factors to consider. Also considerations are where the plants are native to, to Mt. Shasta, Siskiyou County, or California. Tift provided a list of native plants to choose from including; wooly sunflower, coyote mint, white sage, wild ginger, goldenrod, lupine, Shasta lily, and Indian paintbrush. She also provided examples of hardscaping.

Question and Answer Period:

A question asked regarding the presence of detergents in gray water and their effect on plants. Presenters indicated that natural soaps and detergents should be used and that phosphorus in detergent as a surfactant that gets stains out, would have the same effect on the soil.
Sean Powell was asked if the water conservation resolution would be up on the City's website, he indicated that if it wasn't already, it should be soon.
An audience member asked about the keyhole garden in Joki's presentation, how the plants would not be burned by the composting material. Joki stated the only way it would be burned is if it contained too much nitrogen.

Closing:

The presenters contact information was made available. The presenter's presentations will be available, along with a video of the presentations at:
http://www.mtshastaca.gov/publicworks/conservation.php

There will be another Water Talk next Thursday May 28th "Mount Shasta Mud Flows".