TRACKING AND REDUCING WINERY WATER USAGE

YOUR PRESENTERS

JUDY THOET

WINERYWISE

WHY AND HOW TO SUSTAINABLY REDUCE WINERY WATER USAGE

DR. STUART CHILDS

KENNEDY/JENKS

CASE STUDIES AND EXAMPLES OF WINERY WATER CONSERVATION, WASTEWATER MANAGEMENT AND IMPACTS ON ENERGY USE

KEN NAVIDI

BAINBRIDGE ASSOCIATES, INC.

MONITORING WATER USE AND WASTEWATER MANAGEMENT PRACTICES IN WINERIES

COMMONLY USED TERMS

- INCOMING CLEAN WATER IS YOUR ***SOURCE WATER***
- OUTGOING WATER (MIGHT NEED SOME CLEANING) IS YOUR ***PROCESS WATER OR WASTEWATER***
- ***SUSTAINABILITY*** AND ***REDUCING***
- ***SOP*** IS STANDARD OPERATING PROCEDURE
- GAL OF WINERY WATER USED TO PRODUCE GAL OF FINISHED WINE (GAL WATER/GAL WINE)

SHOULD YOU BE CONCERNED ABOUT WATER AVAILABILITY?

CENTRAL AND EASTERN WASHINGTON

WILLAMETTE VALLEY

DROUGHT, WATER DEPLETION, AND JUST DO IT!

DROUGHT

EXTENSION OF CA DROUGHT TO OREGON

SEASONAL DROUGHTS IN OREGON

GLOBAL WARMING EFFECT

WATER DEPLETION

CONTINUED GROWTH IN OREGON, PEOPLE AND AGRICULTURE

GROUNDWATER RESTRICTED AREAS (*MAP*)

NEW DAMS – DRIFT CREEK!

EXEMPT WELLS (2-5 MIL GAL)

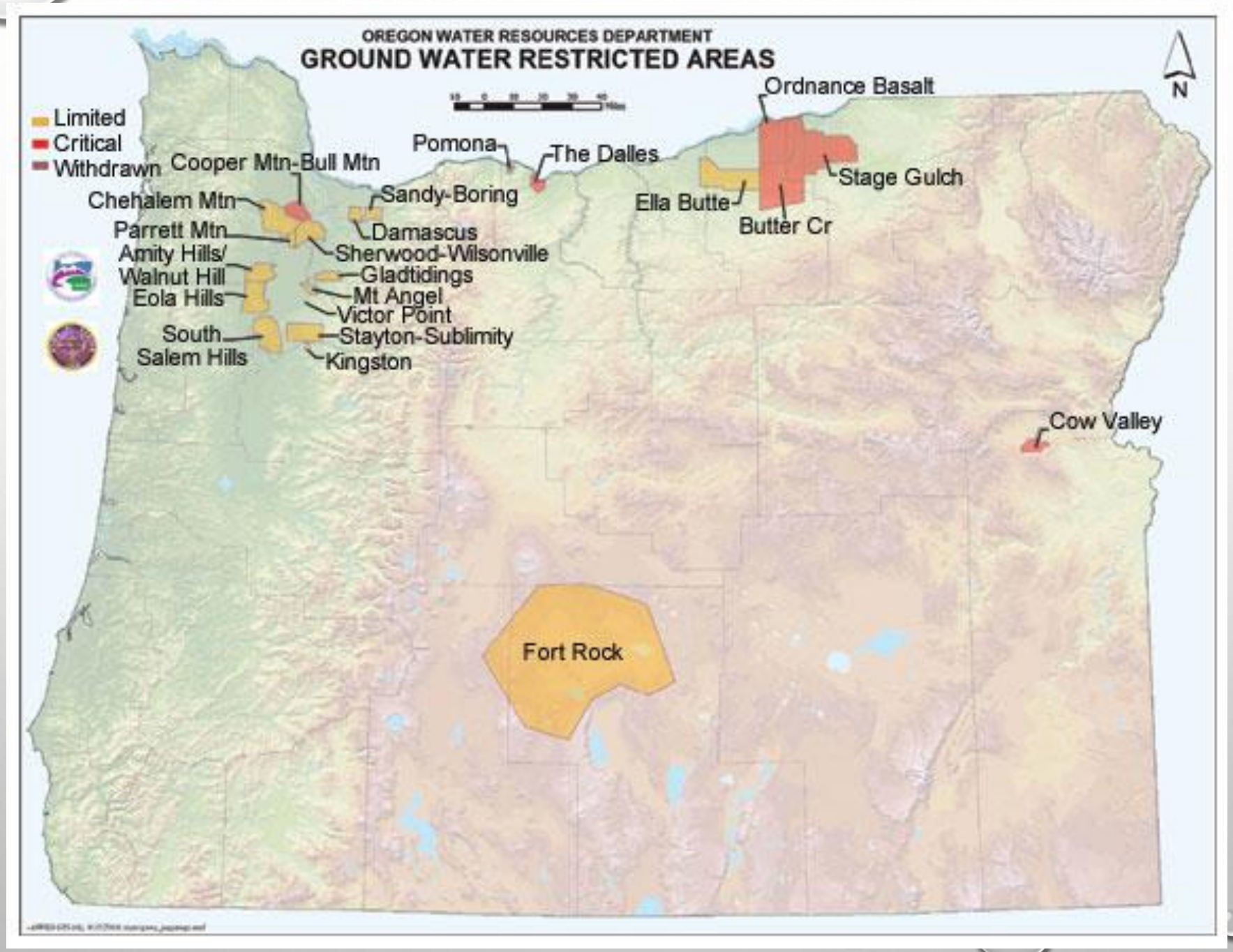
JUST DO IT!

CONSUMERS LOVE SUSTAINABILITY

SOME CERTIFICATION PROGRAMS REQUIRE IT

PROACTIVE IS BETTER THAN REACTIVE

LESS WATER = LESS ENERGY


OREGON WATER RESOURCES DEPARTMENT
GROUND WATER RESTRICTED AREAS
N
Limited
Critical
Withdrawn
Ordnance Basalt
Pomona
The Dalles
Cooper Mtn-Bull Mtn
Chehalem Mtn
Sandy-Boring
Parrett Mtn
Damascus
Amity Hills/
Walnut Hill
Sherwood-Wilsonville
Gladtidings
Eola Hills
Mt Angel
Victor Point
South
Salem Hills
Stayton-Sublimity
Kingston
Ella Butte
Butter Cr
Stage Gulch
Cow Valley
Fort Rock

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GROUDWATER LIMITED AREAS

NEW DAMS ANYONE?

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HOW DO YOU BEGIN?

- GET COMMITMENT – FROM THE TOP TO THE BOTTOM
  - REVIEW WATER REDUCTION STRATEGIES FROM EXISTING SOURCES
  - ORGANIZE YOUR TEAM & DEFINE OBJECTIVES FOR YOUR WINERY (I.E., REDUCE WINERY WATER USE BY 15%)
- COLLECT DATA
  - COMPILE EXISTING WATER USAGE DATA (SOURCE WATER AND PROCESS WATER) OR BEGIN TO COLLECT IT
  - BE CONSISTENT WITH YOUR DATA RATIOS (GAL WATER/GAL WINE OR TONS CRUSHED, ETC)
- REVIEW DATA AND BRAINSTORM REDUCTION OPTIONS
  - CONSIDER ECONOMICS AND QUALITY
- DEVELOP AND IMPLEMENT YOUR ACTION PLAN (SOP'S!!)
  - GIVE YOUR EMPLOYEES TOOLS – TIMERS FOR HOSES, BIG CLOCKS, SPRAY NOZZLES, AND BROOMS. LEAK PATROL!!
- REVIEW RESULTS (CELEBRATE!) AND ADJUST PLANS AND/OR DEFINE NEW OBJECTIVES

FREE SOURCES OF INFORMATION

(YOU DON'T NEED TO REINVENT THE WHEEL)

- CALIFORNIA SUSTAINABLE WINEGROWING ALLIANCE/SUSTAINABLE WATER MANAGEMENT HANDBOOK FOR SMALL WINERIES (WWW.SUSTAINABLEWINEGROWING.ORG)
- WINE INSTITUTE - COMPREHENSIVE GUIDE TO SUSTAINABLE MANAGEMENT OF WINERY WATER AND ASSOCIATED ENERGY (WWW.WINEINSTITUTE.ORG)
- WINERYWISE (WWW.WINERYWISE.ORG)

WINERYWISE™

WASHINGTON'S WEB-BASED WINERY SUSTAINABILITY GUIDE

- GRASSROOTS EFFORT BEGAN IN 2007 – VINEWISE COMPANION GUIDE
- DEDICATED TO EDUCATING WA WINERIES ON SUSTAINABILITY PRACTICES - FREE
- WRITTEN BY WINEMAKERS, FOR WINEMAKERS
- WWIF FACILITATED GRANT ORIGINATION
  - USDA SCBG - $128,000
    - EXPERT/TECHNICAL REVIEW
    - WEB SITE DEVELOPMENT
    - WIP (WINERIES IN PRACTICE) TECHNICAL ASSISTANCE

WINERYWISE™ WIP'S

- WIP'S (WINERIES IN PRACTICE)
- VERIFIABLE EFFICIENCIES REQUIRED BY GRANT
- WIP'S TECHNICAL ASSISTANCE
- 7 OF THE 10 WIP'S SELECTED WATER REDUCTION AS THEIR WINERY PRACTICE TO FOCUS ON

(WEB SITE)

SIMPLIFIED WATER BALANCE

		JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
A	Hopper Sanitation	0	0	0	0	0	0	0	0	3,000	3,000	0	0	6,000	0.55%
B	Bin Sanitation	0	0	0	0	0	0	0	0	400	600	800	0	1,800	0.16%
C	General Press Sanitation	0	0	0	0	0	0	0	0	7,500	7,500	3,750	0	18,750	1.72%
D	Pushing Red Must	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
E	Chasing White Juice	0	0	0	0	0	0	0	0	5,000	5,000	1,250	0	11,250	1.03%
F	Chasing Red Pressings	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
G	Cellar Wine Pushing/Line Sanitation	10,000	15,000	15,000	15,000	15,000	15,000	15,000	20,000	22,500	50,000	30,000	10,000	232,500	21.27%
H	Cellar Tank Sanitation	17,400	15,600	15,540	15,690	15,600	14,910	15,840	15,540	18,300	33,400	13,000	4,800	195,620	17.89%
I	Barrel Cleaning	10,000	15,000	15,000	15,000	15,000	15,000	15,000	20,000	22,500	50,000	30,000	10,000	232,500	21.27%
J	Barrel Storage Sanitation	2,100	1,800	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100	1,200	24,000	2.20%
K	Lees Filter Sanitation - minimal	3,600	3,600	3,600	3,600	3,600	3,600	0	0	0	0	0	0	21,600	1.98%
L	Cross-Flow Sanitation	20,000	20,000	20,000	20,000	20,000	20,000	20,000	25,000	25,000	10,000	10,000	5,000	215,000	19.67%
M	Centrifuge Sanitation	800	800	400	200	200	200	200	200	800	800	800	800	6,200	0.57%
N	Cleaning Tankers	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0.00%
O	Bottling Sterilization	12,800	12,800	13,600	13,600	14,400	12,800	13,600	14,400	12,000	0	0	8,000	128,000	11.71%
P	General Sanitation	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Q	Lab - likely diminimus	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
R	Leaks and Drips	579	579	579	579	579	579	579	579	579	579	579	579	6,943	0.64%
S	Vacuum Pumps (bottling, lab, filters)	19,200	19,200	20,400	20,400	21,600	19,200	20,400	21,600	18,000	0	0	12,000	192,000	17.56%
T	Misters	1,550	1,400	1,550	1,500	1,550	1,500	1,550	1,550	1,500	1,550	1,500	1,550	18,250	1.67%
U	Electrodialysis													0	0.00%
V														0	0.00%
W														0	0.00%
X														0	0.00%
Y														0	0.00%
Z														0	0.00%
	SUBTOTAL - PROCESS WATER	76,700	84,600	85,240	85,190	85,900	83,610	81,740	97,240	119,100	162,400	91,700	39,800	1,093,220	100.00%
R	Storm Water	12,230	8,191	6,732	6,395	6,732	7,293	2,132	2,917	4,600	8,191	10,771	12,903	89,087	5.64%
S	Domestic	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	396,000	25.09%
	TOTALS	**121,930**	**125,791**	**124,972**	**124,585**	**125,632**	**123,903**	**116,872**	**133,157**	**156,700**	**203,591**	**135,471**	**85,703**	**1,578,307**	100.00%
	Flow Meter	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Difference	121,930	125,791	124,972	124,585	125,632	123,903	116,872	133,157	156,700	203,591	135,471	85,703	1,578,307	

WINERY WATER GUZZLERS

TANK CLEANING

MANUALLY REMOVE SOLIDS

USE LESS WATER PER CLEANING

CAPTURE AND REUSE CLEANING SOLUTIONS AND RINSE WATER

BARREL CLEANING

STEAM CLEANING

LOW FLOW/HIGH PRESSURE WASHING SYSTEM

REUSE WASH WATER

INTRODUCE BARREL ALTERNATIVES

PUSHING WINE/LINE SANITATION

BLEND FROM TANK TO TANK INSTEAD OF TO A NEW TANK

USE GAS TO MOVE WINE

USE LESS WATER PER HOSE CLEANING

REUSE CLEANING SOLUTIONS AND RINSE WATER

YOU MAY NEED TO LOOK DEEPER

REALISTIC GOALS

- 2.9 GAL OF WATER/GAL OF WINE (WINE INSTITUTE WATER CONSERVATION RATIO)
- SMALLER WINERIES WILL HAVE HIGHER RATIOS
- FOUR WIP WINERIES ACHIEVED <2.9 GAL WATER/GAL OF WINE (≈2.4)
- ONE WIP WINERY ACHIEVED <2.0 GAL WATER/GAL OF WINE
- WHAT WILL YOU ACHIEVE??

IN SUMMARY . . .

- WATER SUPPLY IS FINITE
- GATHER IDEAS, GET COMMITMENT, MEASURE, PLAN (SOP), IMPLEMENT
- K.I.S.S.
- CELEBRATE SUCCESS!

THANK YOU!!

- THANK YOU TO ALL THE OREGON WINERIES WHO SHARED WITH ME THEIR OWN WINERY PRACTICES AND CURRENT SOURCE WATER/PROCESS WATER STATUS
- TODD JARVIS
  INSTITUTE FOR WATER & WATERSHEDS
  OREGON STATE UNIVERSITY
- OREGON DEPARTMENT OF ECOLOGY
- MARGARET BETTER, WATER RESOURCES MANAGER

  OREGON DEPARTMENT OF AGRICULTURE