ST. HELENA WATER SUPPLY ANALYSIS

Prepared by Alan Galbraith, January 31, 2014

St. Helena 2013-14 Water Supply vs. Usage

As of the January 20, 2014 St. Helena Weekly Water Report

PREFACE: This analysis was completed because St. Helena, like the State itself, is in the third year of drought. The City is using significantly more water than last year due to this drought, causing the City to run out of water faster. As the drought worsens, the fear is that water use will accelerate with disastrous results. This analysis does not address the period after June 30, 2014, when the summer heat will also cause greater water usage. The new fiscal year, used by water officials, begins July 1.

ST. HELENA'S WATER USAGE: Projected 2013-14 Usage, July 1, 2014 - June 30, 2014.

2012-13 Past usage: 1889 Acre Feet (note 5)

Present increase this year over 2012-13 year: + 9.8%

January/June 2014 Projected Usage: (Note 1 below) 2074 Acre Feet

[take actual usage in the 2012-13 water year, multiply it by the increased usage so far this year over last year, and come up with projected 2013-14 usage (or total potable (drinkable) water demand]

Less Usage for 2013-14 year so far: -1241 Acre Feet

Remaining Projected 2013-14 Usage: 833 Acre Feet

[take projected 2013-14 usage and subtract total usage to date (from the last weekly water report). This then provides the amount that must be supplied going forward through June 30, called this "remaining" 2013-14 usage]

ST. HELENA'S WATER SOURCES:

1. City Well Supply:

Maximum Prior Usage to 2007: (Note 2) 521 Acre Feet

Usage 2013-14 so far: -276 Acre Feet

Remaining 2013-14 Supply: 245 Acre Feet

[assume that we will produce the most that we have ever produced (521 AF) and subtract the amount we have produced in this water year to date. That provides the amount that is available from the City wells going forward through June 30]

2. Napa Supply: We are allowed to buy 600 acre feet each year.

[State allotment does NOT affect these numbers. St. Helena buys water from the City of Napa, and it is required to deliver under our contract regardless of its state allotment.]

Remaining 2013-14 Supply: 206 acre feet

3. Bell Canyon Supply
Critically Dry Year: (Note 3), 510 Acre Feet
This is Sustainable Yield, (Note 4)

Remaining 2013-14 Supply to June 30: 216 AF/164 Acre Feet

ST. HELENA'S WATER DEFICIT: Potential 2013-14 Deficit to June 30, 2014:

Remaining 2013-14 Usage Available: 833 Acre Feet

Less:

City Well Supply: -245 Acre Feet

Napa Supply: -206 Acre Feet

Bell Canyon Supply: -216AF/-164 Acre Feet

Total Potential Deficit to June 30, 2014: 166 AF/218 Acre Feet

Total Percentage Deficit: 20%/26%

This means: St. Helena will have used up all the water it had available and still be needing 20-26% more to see it through to June 30 at the present rate of usage.

Footnotes:

1. Increase over prior water year stood at 6.2% at end of December, 3.0% at end of November, and 0.6% at end of October.

2. Estimated maximum production capacity of City Wells is 700 AF.

3. Defined as 10.4" (lowest recorded (1976)) to 22" of rainfall: the West Yost Associates ' model estimated the sustainable yield at 510 AF in such a year. WYA, Technical Memorandum No. 2 at page A-11 (May 12, 2010). Rainfall to date (January 20, 2014) in water 2013-14 is 2.07"; rainfall in calendar 2013 was 7.94" (lowest on record).

4. "Sustainable Yield " is "the maximum amount of water that the City could withdraw from the reservoir each year and be confident that it could withdraw the same amount every year, i.e., this calculation allows carryover storage from wet years to dry years." WYA, Technical Memorandum No. 2 at page A-8.

5. Acre-Foot of water: the volume of one acre of surface area to a depth of one foot or 43,560 U.S. survey cubic feet or approx. 25,853 U.S. gal.