

ADVANCE COPY: PRESENTATION TO THE PONDEROSA CSD BOARD MARCH 8 MEETING

The PCSD Board is to be congratulated for its tireless efforts to improve the community services of the Ponderosa community. With less than 15% of the community eligible to vote for or serve on the board, it falls to the same few individuals to give of their time to make the community workable. I, and surely all of the community, appreciate your generosity with your time and your energy.

I offer these comments in the spirit of cooperative dialogue with the PCSD Board, not criticism. I hope that they will be useful in shaping any final decisions that need be taken prior to commencement of actual construction on the water project. This may be the last opportunity for the PCSD board to make these decisions with due care for their responsibilities to the water district users. In emails the USDA-RD has made it very clear the PCSD, and not USDA-RD are responsible for all of the engineering decisions regarding the water project.

Some background for those of you on the Board who only know me from seeing me and my dogs on our way to and from our beautiful surrounding forestland. I have an engineering degree from Rice University and a MBA from NYU. I was an early pioneer in SCADA systems in the late 60's, early 70's with three published papers on computer controls for petroleum refinery and chemical plant systems as manager of refinery and chemical systems. I am familiar with evaluating capital projects having been manager of strategic planning for ARCO. As CFO of a World Bank, UN, and USAID agricultural research institute (International Institute for Tropical Agriculture) in Africa, I had responsibility for the water, sewage treatment, electric generation, and central air conditioning for a 2500 acre research campus with 250 houses and apartments and extensive research labs in a very challenging environment. Before moving to California I was on the board of a community service district in Wyoming. Bill Dolmovic can vouch that I am capable of using my education and past experience in practical ways. I have also benefited from John Kracik's unsurpassed knowledge of the current system, as well as input from Shawn Witherow on the proposed SCADA, but any mistakes herein are my own.

I have been politely and correctly criticized for not getting involved in this project prior to July 2011. My only excuse is that I was busy caring for a dying family member, but nonetheless I could have kept up to date.

With only 15% of users eligible to be or to vote for board members, is the Board's responsibility to fairly represent the interests of the other 85%. Despite being requested to do so, the Board did not put the water project to a vote of all of the water users. If the loan were from a financial institution, California law would require it be approved by a plurality of all users voting in such an election. When, as in this case, the loan is from a US Government agency, California law must defer to US requirements which make such an election optional. John Kracik and I each requested the PCSD Board to hold such an election. The Board refused. When I asked for the list of PCSD water users, so that I could have an independent CPA firm hold a non-binding election, the board through the PCSD attorney replied the list was confidential.

I have read all of the PCSD minutes from 2004 to date. I have read and understood the PER prepared by Provost and Pritchard. I submitted a lengthy letter to the Board for the 218 hearing. In it I raised many of the points I raise below. As far as the record shows, the board or its engineers did not consider nor respond to the comments. In March 2010, as the PCSD Board was considering applying for a \$800,000 grant/loan, John Kracik submitted a written analysis showing how the expenditure of \$200,000 out of ongoing revenues would solve all current reliability problems. In contrast to the subsequent PER, John addressed needed improvements to the wells and well pumps, the most critical

component of our water system - tanks and SCADA systems do not produce water. No response to John's report is recorded and there is no indication that the Board or P&P considered this alternative. Lately there have been requests for how many times in the past the tanks have run dry. The Board replied that they do not keep this data, but a review of the minutes show that the tanks got low, but even then not empty, only during major water line breaks or during the prolonged power outage last winter when there was no propane or starting battery for the Fawn well. This presentation is perhaps a final effort to elicit some sort of a factual response from the PCSD Board on these factual questions.

THE QUESTION OF TANKAGE AT SUMMIT

Contrary to the PCSD minutes, the USDA-RD has set no tankage requirements for the grant/loan. P&P estimated the all in cost of an additional 60,000 gallon Summit tank at \$252,000. Since the PER the new engineering firm, Five Creeks, has determined that the site will not support the second tank and it seems that the current plan is to demolish the current 60,000 tank and foundation and build a new tank of 120,000 gallons. No cost estimate for the demolition and construction appear in the minutes through January. However, using the P&P estimate for the 60,000 g tank of \$252,000, we can estimate the cost of the 120,000 g tank (using the 0.6 power rule for cost scaling, 2 raised to the 0.6 power = 1.52, $1.52 \times \$252,000 = \$382,000$ plus demolition and removal of the old tank) to be about \$400,000. \$400,000 or thereabouts is a lot of money.

How did the P&P PER justify the need for more tankage and did they quantify the expected improvement in on stream reliability from the increased tankage? First the PER calculates that maximum daily demand after adding 40 more homes in the next 20 years will be 37,000 gpd. The PER acknowledges that the California Waterworks Standards requires that systems with less than 1000 connections have storage capacity equal to maximum daily demand, or in our case a minimum of 37,000 gallons by 2032. The current system has 30,000 gallons at Holby, and 60,000 gallons at Summit, fully meeting the requirement, so how did the PER justify the additional tankage?

Like this, IF the largest well is out of service going into a four day summer holiday, and IF the SCADA or other control fixes do not allow us to pump Holby up to Summit on demand, and IF our water coordinator doesn't manually start transferring Holby on the first day, and IF we do not institute stage 1 water conservation, then we will be 40,000 gallons short for the 4 day holiday. What are the odds of the largest well being out of service for a four day summer holiday? Using mean time between failure for a routinely maintained well pump, estimated average repair time, and frequency of four day holidays, this will happen on average once every 250 years! If it happens during the useful life of our water system, and control fixes or common sense action allow us to use the Holby supply, then we are 10,000 gallons short (out of a total consumption of 150,000 gallons for the period), an amount easily handled by conservation. This is hardly a scenario which justifies an expenditure of several hundred thousand dollars.

THE COST AND UTILITY OF A SCADA SYSTEM

The \$130,000 (all in cost) in the PER is small compared to the cost of tankage above, but large compared to the cost of maintaining and renewing the existing first and second level controls, which has to be done even if a SCADA system is installed.

The first level well controls actually start and stop the down hole pump in response to demand from the second level controller (e.g. Summit tank gauge), loss of water level in the well or elapsed time of pumping. This first level hardware is at the well.

Second level control is much like your household thermostat, for example the Summit level dropping below control point puts the Fawn and Lake wells on demand so that the first level control is activated and the pumps cycle accordingly. These controls function quite simply and reliably just like your household thermostat.

If you were to replace these simple direct controls with one where all data inputs regarding the well and tank level went to the computer at the PCSD office and all outputs back to the wells, you would most likely have a less reliable system, one in which failures are total rather than partial, where degradation is catastrophic rather than graceful. So any SCADA system should exist as an overlay of these basic control loops.

So if we in any event must make the current well and tank level controls operable what are we buying with the \$130,000? One promise is to be able to automatically transfer Holby to Summit. This could be done without a SCADA by having a second, lower, water level at Summit start the transfer with a timer turning the transfer pump off. But do we really want Holby to be transferred automatically? An advantage of separate tankage at Holby and manual transfer is that if large water main breaks do occur, they can be blocked off and only then is Holby transferred to Summit. Also, it is good operating practice to have the Holby site receive human visitation. So if we want to transfer automatically why not simply do it by Summit level control with the ability to turn this control loop off in most instances.

One thing the SCADA will certainly not do is automatically find small leaks. In closed systems such as pipelines, metering at inlet and outlet are of sufficient accuracy to notice moderate leaks. In a system such as ours with varying usage it is difficult to distinguish between a leak and increased demand. Since almost all large leaks start as small leaks, PCSD should own a portable acoustic leak finder and use it for routine leak surveys to plan repairs of small leaks while they are small.

Having a SCADA display at the PCSD office displaying alarms and such may seem like a fun thing to do, but what is the real utility? The most frequent alarm event which leads to calling out someone to investigate is now, and will be with a SCADA, a low level alarm at the Summit Tank. The first thing the responder will do now is check the Fawn and Lake wells for problems. If none, he looks for leaks. With a SCADA he will stop at the office and then if the SCADA has diagnosed that a well is down he goes there. If not he checks each well for problems and then he looks for leaks. Time savings?

All that I am suggesting is that any expenditure for a SCADA system be justified by detailed analysis of the promised reliability improvements or manpower savings. In the early days of computer control of very large and complex refinery systems with hundreds of data inputs, alarms, and control loops, we often installed systems and then learned what we could do with them. This was costly but we could write it off as research. PCSD is not a research organization and a SCADA for simple water system is probably overkill.

POSSIBILITY OF HAVING TO REFINANCE USDA-RD LOAN WITH A COMMERCIAL LOAN

Some partial excerpts (full code available online) from the Code of Federal Regulations which govern our USDA_RD grant and loan (emphasis added):

§ 1780.2 Purpose.

Provide loan and grant funds for water and waste projects serving the *most financially needy communities*.

§ 1780.1 General.

(a) This part outlines the policies and procedures for making and processing direct loans and grants for water and waste projects.

(b) ***The income data used in this part to determine median household income must be that which most accurately reflects the income of the service area.*** The median household income of the service area and the nonmetropolitan median household income of the State will be determined from income data from the most recent decennial census of the United States. If there is reason to believe that the census data is not an accurate representation of the median household income within the area to be served, the reasons will be documented and the applicant may furnish, or the Agency may obtain, additional information regarding such median household income. Information will consist of reliable data from local, regional, State or Federal sources ***or from a survey conducted by a reliable impartial source.***

(c) RUS debt instruments will require an agreement that ***if at any time it shall appear to the Government that the borrower is able to refinance the amount of the indebtedness to the Government then outstanding, in whole or in part, by obtaining a loan for such purposes from responsible cooperative or private credit sources, at reasonable rates and terms for loans for similar purposes and periods of time, the borrower will, upon request of the Government, apply for and accept such loan in sufficient amount to repay the Government and will take all such actions as may be required in connection with such loan.***

§ 1780.13 Rates and terms.

(b) Poverty rate. ***The poverty interest rate will not exceed 5 per centum per annum.*** Loans approved on or after May 23, 2008, will have the poverty interest rate set at 60 percent of the market rate. All poverty rate loans must comply with the following conditions:

(1) The primary purpose of the loan is to upgrade existing facilities or construct new facilities required to meet applicable health or sanitary standards; and

(2) The median household income of the service area is below the higher of the poverty line, or 80 percent of the Statewide nonmetropolitan median household income.

It appears that somehow the PCSD was able to qualify for a poverty grant /loan as a ***most financially needy community.*** With 85% of us owning two homes this is amazing. How did we do it? With 85% of us reported elsewhere census data could not have been used. A "survey conducted by a reliable impartial source" of the PCSD users would have been required. Was this done? Maybe I also qualify for food stamps!

The real surprise is that the loan is callable if ***at any time it shall appear to the Government*** that the PCSD is able to refinance the loan at market rates. Of course a loan from a commercial source would then under California law require it be approved by a plurality of all PCSD users voting in such an election. What if that vote were negative? But if an election were to be held and approved the USDA loan with full disclosure that the loan might require refinancing, isn't any future refinancing then already approved under CA law? It would seem prudent since the USDA loan is callable to have an election before drawing on the loan.

SUMMARY

What I'm requesting is, first, the PCSD Board seriously consider dropping the increased Summit tankage from the project. For now, and probably forever, stay with the 60,000 gallon recently refurbished tank. If not then please give details of what actual increases in system reliability we get from this large expenditure.

Second, that any expenditures on a SCADA system be supported with details of the increased system reliability and how it will be achieved.

Third, how did we qualify as a *most financially needy community*? Did we make this claim or did the USDA make this determination? Is there any liability to the community if we proceed knowing that this is false? Is it ethical to make this claim?

Fourth, after revising the project by removing the increased tankage at Summit and minimizing or eliminating the SCADA system, renegotiate a smaller grant/loan (like \$150,000/\$250,000?) with USDA.

Fifth, have a vote of all PCSD users. A YES vote if they prefer to accept the renegotiated grant/loan or NO vote to accomplish the repairs and upgrades out of the funds generated by the recent rate increase.

Many thanks for your attention and I welcome any questions, answers, or further discussion.

Roger Smith

