

Thursday, December 18, 2008 (cac179)

To: Dan Breedon

Fr: Ed Miller

Subj: Toxic substance contamination, halophytes, carbon inventories, oil crunch & well measurements

Ref A: C. Bowman, Chemical Disclosure Urged, Sac Bee Dec 17, 08, (cbowman@sacbee.com), 916-321-1609)

Ref B: K. Anderson, Ground Water Handbook, National Ground Water Association 91, (Chico State TD407A551991 Ref)

Ref C: B. Delinsky, Looking for Peyton place, Scribner 2005

Ref D: J. Rozema, Crops for salinized water, Science Dec 08, p 1478

Ref E: R. Evans, Carbon in charge, Science 14 Nov 08, pp133i8-1340

Ref F: L R. Kerr, World oil crunch looming, Science 21 Nov 08, pp1178-1179

Ref G: G. Taylor, Construction Codes & Inspection Handbook, McGraw Hill 2006, Chico State Th439.t39 2006

Ref H: T. Peter, Simply C.S. Lewis, Crossway Books 1997

Ref I: C.S. Lewis, An experiment in criticism, Cambridge Univ Press 1961

Ref J: Thompson, sustainable forestry history, Forestry History center in North Carolina broadcast on UWTV on Dec 18, 08 as part of the Denman Forestry issues series.

Background: Ref A deals with 83,000 potentially toxic compounds in products in order to minimize their real or perceived impact on the environment. Ref B deals with the ground water toxic compound allowable levels in the eyes of the EPA in addition to water measurement techniques. Ref D examines the utility of saline water for irrigation of halophyte vegetation. Ref C is a novel that points up the subtle and cumulative effects of toxic materials. Ref D looks at the overall carbon sinks and controls. Ref E makes a prediction of the availability of oil through 2030. Ref G looks at the building code status of individual states. Note that current issues of periodical literature are no longer grouped together in the Chico State Library. They can be found unbound adjacent to bound volumes in the main stacks. Ref H sets the tone for examination of issues that cross references Ref I in the area of criticism that is applicable to the review of material that within the final Butte County general plan update. Ref J is a thorough review of the history of sustainable forestry. The applications of the above documents for the Butte County 2030 plan are as follows:

1. Per Ref A & B it is becoming clear that we have only begun to fight in a world often limited by toxic compounds. The California Green Initiatives final report notes that 644 million pounds of chemicals are sold in California daily. Maureen Gorsen, director of the state department of toxic substances control notes that for the majority of the 83,000 chemicals introduced to the environment, we do not have toxicity data. The governor wants full disclosure of products in design, manufacturing, use, recycling and disposal to wean industry from toxic compounds. Literature similar to Ref C is stirring up concern in this general area and specifically with mercury. New techniques for potable water "polishing" that can minimize the use of bottled water needs to be pursued.
2. Per Ref D, as part of contingency planning, we need to be aware of the potential for saline tolerant plants and the more general problem of water cleanup by plants.
3. We need to list sources of Butte County carbon in light of new knowledge in Ref E
4. Per Ref F we need to recognize petro chemical availability predictions that scale down to the order of 20 % of current production by 2030 so we can gauge mitigation in a cost effective fashion.
5. Per Ref G, most of the states have gone to the International building code including Oregon and Washington. Some states like Nevada have used the International code on a county by county basis. California is shown as indeterminate as of 2006. We need to give builders and DIY people some guidance on where Butte County is going.
6. Per Ref B we need to make sure that well performance through 2030 is well sampled and archived for all areas of the county. For wells serving less than 5 parcels, the airline method is typical. A small plastic or metal tube is attached at a point below the lowest depth of interest nominally a few feet above the pump entrance to minimize dynamic pumping anomalies. The depth of the saturated water depth in feet is $2.31 \times$ maximum allowable gage pressure. A Schrader (tire) valve at the top of the tube can speed up multiple measurements. Pressurization up to 40 psi can be achieved readily with a hand pump. A compressed gas tank or compressor is typically required for higher pressure measurements. Static measurements 1-2 hours after shut down followed by maximum or nominal pumping flow for 1-2 hours followed by a recovery from pumping after 1-2 hours is typical for low production wells. If precise trending is required, the atmospheric pressure at the time of measurement should be recorded. If cavitation is detected by observation of pump current or lack of output, the cavitation delay time should be noted and, if available, the data base restart setting of the well controller checked/modified. Water spilled from testing needs to be remote from the well to minimize bias. In some cases, the interaction of nearby wells needs to be recognized. The flow from the well can be readily measured with a weir and height gage. The dynamic head loss from particulate filters and treatment tanks needs to be validated. The tasks are well within the capability of a 4th grader and above with limited supervision. More exotic systems based on wetting or acoustics can be devised if cost is no object. For flexible pipe moderate depth wells typical of many upland areas of Butte County, the presence of motor torque dampers needs to be recognized when installing the measurement system initially. The county may want to subsidize/require installation of a measurement system at the time of a new well installation or repair of an existing system.