Sonoma Mountain County Water District
Capital Plan – February 2014

PURPOSE The document which follows is the current Capital Plan for the Sonoma Mountain County Water District (SMCWD). Capital plans have generally proven to lead to at least two positive results for utility systems:

A. Improved system performance and availability, and
B. Reduced overall system maintenance cost.

The above outcomes are achieved by moving away from a "break-fix" approach, to a more effective and rational "periodic replacement and preventative maintenance" plan, in which key components are brought into top-flight condition, and are periodically tested to assure their performance. Considering the scope of the SMCWD budget and assets, the following plan will discuss both new capital assets and major preventative maintenance aspects.

A Capital Plan achieves the above by establishing priorities within the overall system, with different maintenance regimes as appropriate. It must be noted that Capital Plans have a significant impact on the financial planning of the utility, as follows:

A. Determine funding required, whether from rates, bonds, or other sources,
B. Timing of capital needs
C. Emergency funds to handle significant system events, and
D. Necessary inventory.

It should be noted that the Plan assumes that the District wishes to maintain the system at a high state of reliability, for both the near- and long-term. Further, it is assumed that the Plan which follows **does not** consider system-wide water treatment, beyond the present chlorination components. This is due to the fact that current and previous system water tests have indicated that only turbidity (about 7 NTU), and iron and manganese levels (2,600 and 380 ppb, respectively) have been measured in excess of maximum allowable levels. The 1999 Brelje & Race (B&R) study considered a central "green sand" filtration system to mitigate these problems, which in today's dollars might cost about $3,000 per customer. A further issue is the requirement for a large leach field for the system, which is not available. In any event, the vast majority of our customers have and maintain treatment systems for the above.

SYSTEM COMPONENTS The SCMWD system serves 55 customers at present, and has a typical annual flow of about 6 million gallons to those customers. The system also supplies 7 fire hydrants throughout the customer service area. The system components can be categorized as follows:

A. *Supply* Wells, shaft pumps, contact tank, and booster pumps.
B. *Tankage* Tanks 1, 2, and 3 (30,000, 15,000, and 15,000 gallons respectively). Included with Tanks 2 and 3 are altitude valves. Tank 1 provides system head and steady flow during all operational periods.

provides system head and steady flow during all operational periods. Tanks 2 and 3, with their associated altitude valves, provide system pressure control.

C. *Distribution* The distribution component consists of direct-buried 6" diameter transite system mains, with 4" diameter transite branches. In total, the main system comprises about 11,000 feet of pipe. Also included in the distribution system are fire hydrants for emergency needs, numerous valves for system operation, and blowoff devices.

D. *Metering* Individual customer meters are the "cash registers" of the SCMWD system.

The four component categories are in descending order of importance as far as system availability, and the potential impact on numbers of customers should a component fail (e.g., a well failure takes out the entire customer base, whereas a meter failure only affects one customer). The categorization thus has a major influence on priorities for system ongoing maintenance and replacement.

CURRENT SYSTEM CONDITION Within the above categories, current system conditions are as follows:

A. *Supply* The October 2010 Capital Plan concluded that this area was the highest priority for immediate investment. At the time, SMCWD had one operating well (well #001); wells #002 and #003 were not in a condition to supply the system under normal usage. As such, customer rates were increased, in order to raise the necessary funds to install a new pump and well (#004), at a cost of about $70,000. This project was completed in the 4th quarter of 2013, and included a second contact tank as well, plus the decommissioning of wells #002 and #003. Operated together (most commonly in a "lead/lag" mode, or individually) the District now has 100% redundancy of supply.

In addition, the electric system also has a transfer switch installed, such that, in the event of an extended electrical outage, a generator may be installed to keep water flowing to our customers. The District at present does not own a generator. As a result, the District may or may not be able to obtain and install one in the short term during an electrical outage.

B. *Tankage* Tank 1, the main system tank, is structurally in poor condition, with the roof (and perhaps the supporting structure) in need of repair. In addition, there is approximately 2' of sludge in the bottom of the tank, contributing to operating problems and increased contamination, especially in upset conditions such as in the September 2011 event. A liner could be installed to mitigate the relatively minor leaks, but this would not address the roof structural issue. More will be known about the condition of our tankage following the cleanout process in early 2014.

Tanks 2 and 3 are likely in similar condition; however, these tanks are less critical to system operation should repairs be needed.

Note that during its December 2012 inspection, the California Department of Public Health (DPH) indicated that the system required an additional 40,000 gallons of storage capacity, in order to maintain service in emergency conditions. However, the regulations should allow this requirement to be met with present tankage volumes, if we install a generator at the system pump house (see above).

C. *Distribution System* The current distribution system is outdated in design, leaking (typically about 15% of flow), and subject to occasionally failures. Chronic system leakage is due largely to the piping material (asbestos cement, as manufactured by the Transite Company). Transite piping has been demonstrated to become quite brittle over time, and thus is not suitable for mains located relatively close to roads, or for systems in seismically active areas. Whatever the cause of our system leakage, it is consistent with national averages. To date the District has been able to maintain flow to customers by demand maintenance (i.e., repairing when serious leaks become evident). It must be noted, however, that system leakage does not economically justify distribution system repairs. When water leaks, it generally drains back to the aquifer. As such, the only true "loss" is the electric and hypochlorite usage, which at present leakage rates is a few hundred $ per year.

Valves and other distribution system components are generally performing adequately, due in part to the protection of the valves. However, during the September 2011 event, valve operability was a major contributor to customer inconvenience. Under the current contract with the System Superintendent, valves are tested annually, and an operability report created. This was largely completed by Yager. The results were followed up on by several members of the Board. The conclusion is only relatively minor repairs/replacements are needed, at a cost of about $5,000 or less.

Finally, since the last Capital Plan was issued, all 7 fire hydrants were replaced. These hydrants have performed well in two residential fires since the replacement.

D. *Metering* System meters are performing adequately. When requested by a customer, or if monthly system flow to a customer appears anomalous, meters are replaced and tested. Actual replacement of meters is relatively infrequent, only a few per year or less.

CAPITAL PLAN RECOMMENDATIONS Based upon the above, the following recommendations are offered for the Capital Plan:

A. *Supply*

To complete the supply redundancy, the District should consider the purchase of an emergency diesel generator, of approximately 20 kW. A diesel generator can be either pad-mounted or towable. Installed cost is about $25K in 2013 dollars. Given SMCWD's that under our current rate structure we are generating about $16K of cash per year into savings, if we move forward with this option, we could make this purchase sometime in mid-late 2015, while still leaving $25-30K of cash for emergent District needs. However, there is the possibility that a propane-fueled generator could be obtained for less than $10K.

B. *Tankage*

The tanks have been cleaned out, with a significant amount of sludge removed and disposed of. Structural repair costs remain to be determined.

In the longer term, the District should raise the funds to replace Tank #1, with a new painted, bolted steel tank. Given the size of the site, it would seem that a tank capacity of about 50,000-60,000 gallons would be appropriate, to provide extra operating flexibility. Accounting for the potential salvage value of the redwood, cost should be in the $75-80K range – engineered, constructed, and placed into service. If this were the first priority, it might take until at least 2017 or 2018 to be able to afford such an investment.

Given SMCWD's somewhat limited resources, we would seem to have one of two courses of action:

1. Purchase a generator for our pump and well site in 2015, then invest in a new Alta Monte tank in say 2020. This would have several advantages: 1) we would have electric supply redundancy by 2015, which protects our ability to deliver water service under the circumstance of a several day electric outage and an intact system, and 2) we would be able to meet the CA DPH's supply requirement by 2015. If a propane-fueled generator could be obtained for less than $10K, we could purchase and install it sooner.
2. Prioritize the new Alta Monte tank as our next major project. Implicit in this course is that should we have an electric outage, we would attempt to rent a generator. The advantage of this approach is that we would have a new Alta Monte tank a year or two sooner.

Given the above, the recommendation of this plan is **Option 2** above, unless a generator could be purchased and installed for under $10K.. We need to replace the Alta Monte tank in either case; the concern is that its structural condition is deteriorating, thus time is somewhat of the essence. Our sense is that the CA DPH's requirement is not a case of imminent sanction against us; rather, they have a need to know that we are working towards the goal of 100,000 gallons storage.

Also, we need to understand that an installed generator only provides guaranteed ability to serve our customers under a fairly narrow circumstance – an extended (> 24 hours) electric outage, but with both our pump house and wells, and distribution system intact.

C. *Distribution System*

Following the exercising of the system valves and subsequent report, the District should move forward to repair or replace those valves not in good operating condition. Cost is estimated to be about $5K. If and when any "leg" of the system needs to be replaced due to major leakage, the replacement should be modern plastic pipe.

PRIORITIES The following is the recommended sequential priority for new capital assets and major preventive maintenance

1. Valve repair and replacement (preventive maintenance)
2. Replace Tank #1 with a new, 50,000 bolted steel tank (capital investment)
3. Install a generator as a backup electric supply to our well pumps.

The priority above would change if a generator could be purchased and installed for less than $10K.

The above should be accomplished all the while maintaining an approximate $30K cash balance, to respond to any major system component breakdown. The recommended priority is based on providing improved system reliability to our customers, and an ascending order of cost, thus providing the most "bang for the buck". At present, with the redundancy in our supply system, we are not in a great need for spares.