SAVING FOR A SUNNY DAY
City of Fort Bragg Water Enterprise District:
Water Supply, Treatment and Distribution System

April 24, 2008

Summary

The 2007-2008 Grand Jury conducted an inquiry into the City of Fort Bragg Water Enterprise which provides the City and designated parts of the surrounding area with potable water. The Water Enterprise operates as a Division of the Public Works Department and is responsible for generating its own revenue from rate payers, development impact fees, grants and loans.

Respondents to the Grand Jury inquiry described Fort Bragg's Water Enterprise in positive terms. Water quality consistently meets or exceeds State standards and the supply is adequate for current levels of demand.

Carefully prioritized upgrades are strengthening the water treatment and distribution systems after decades of relative neglect. Still, more remains to be done and diligent maintenance is essential. Upgrade priorities include: constructing a reservoir for additional water storage; acquiring back-up generators to ensure a continuous water supply; and achieving redundancy to permit critical system components to be taken off line for servicing.

Unexplained water loss between the treatment plant and end users currently exceeds industry standards. In FY 2005-06, "lost" water cost Fort Bragg ratepayers an estimated $213,000, underscoring the importance of regular maintenance and capital improvements. The need to conserve water has become a given, as is the inevitability of periodic rate increases needed to maintain and upgrade this essential system.

Methods

Jurors interviewed Fort Bragg City officials and employees responsible for collecting, treating and distributing potable water to customers of the City of Fort Bragg Water Enterprise. Jurors also reviewed budgets, planning documents and websites and toured the water treatment facilities.

Background

Fort Bragg's water treatment plant was built in the 1950s. It has had subsequent upgrades but received minimal maintenance between 1986 and 1999. Some equipment has never been off line since the plant was put into service. Top priorities are to achieve back-up for critical parts of the system and to increase storage capacity to ensure an adequate water supply under drought conditions.

There are approximately 2850 customer water meters connected to the system. A few sites within the Water District have private wells.

The Department of Public Health declared a moratorium on new water connections in 1992. After the moratorium was declared, the City completed repairs to the Noyo Lift Station and instituted a water fixture retrofit program (e.g. low-flow toilets and showerheads). This reduced water use to 1974 levels. As a result of these efforts, the moratorium was lifted in 1996 and new connections were permitted within the City. New connections are not permitted outside the City limits. Water production is adequate for current needs and for limited development, but the present lack of storage capacity will result in shortages in the event of drought.

The *Water/Wastewater Collection and Distribution Superintendent* and the *Water/Wastewater Treatment Superintendent* share direct responsibility for operating both the (potable) Water Enterprise and the Waste Water Enterprise. The Superintendents report to the Director of Public Works, who is accountable to the Fort Bragg City Council.

The California Public Health Department (CPHD)[1] sets and enforces water quality standards and certifies Water Operators. Operator certification is based on: satisfactory completion of coursework; a written examination; and supervised experience as an "Operator-in-Training." At the time of the Grand Jury inquiry, the level of staffing was described as the bare minimum needed for adequate maintenance. In 2004, a District commissioned study recommended that an additional operator be added above the current number of funded positions.[2] All Fort Bragg Water Treatment and Distribution operators hold certifications consistent with their responsibilities. Several operators, including one Operator-in-Training, were involved in continuing education, supported by the City.

Salaries and benefits were described as competitive with comparable rural cities. Managers conduct annual performance reviews and provide employees with written feedback. Some of the current operators who had relevant skills were hired from Georgia Pacific (GP) when the mill closed. They earned the required certification with City support. Local housing cost was cited as a concern in the event that it becomes necessary to recruit personnel from outside the area.

Findings

1. Fort Bragg's water comes from three sources: the Noyo River, Newman Gulch and Waterfall Gulch. Quality of the water source and permit restrictions govern when and how much water may be drawn from each location.
2. The State Water Resources Control Board, Division of Water Rights, imposes seasonal limits on the amount of water that may be drawn from the Noyo. From

[1] www.cdph.ca.gov
[2] February 20, 2004 study by Tetra Tech to support NPDES application.

June 1 to October 1, the river flow must be maintained at no less than 3 cfs (cubic feet per second) and pumping is only allowed when tides are at 2' or higher.

3. Water from Newman Gulch is shut off in wet weather when it is affected by naturally occurring tannins that leach from forested land.
4. *Water Use Permits* are temporary and subject to renewal. Fort Bragg's current permit for Noyo River water expires in 2009. The City is now seeking a permanent *Water Use License* in its place.
5. The District has contracted studies to explore other water sources. Test wells near the Noyo produced brackish water. The documented potential for wells at other sites was limited and costs would be high.
6. Access to water rights owned by GP will depend on future negotiations between the City and the owners of those rights. Historically, the GP Mill site had its own water rights for industrial purposes and had little impact on treated water or sewer services provided by the City.
7. Fort Bragg water requires minimal treatment because source quality is high. Monthly water tests are reported to the California Department of Health Services and to the City Manager and City Council.
8. All required tests have met or exceeded State water quality standards in the past year.[3]
9. The capacity of existing pre-treatment storage ponds is approximately 3.0 million gallons. This would be insufficient in the event of drought or increased demand. The City has completed geotechnical studies and is preparing a Request for Proposals (RFP) for design of a 45 acre/foot storage reservoir in Newman Gulch.[4] Project cost is estimated at $1.5 million. Additional raw water storage will still be needed.
10. Treated water storage capacity is 3.3 million gallons. The Treatment Plant has a daily capacity of 2.2 million gallons.[5] Summer demand peaks at 1.2 million to 1.4 million gallons/day; in winter, demand drops to .5 million to .8 million gallons/day.
11. The pump station that serves the area known as the East Fort Bragg Pressure Zone has never operated as intended. It is also serving more connections than originally planned.[6]
12. Some homes in the East Fort Bragg Pressure Zone experience water pressure in the range of 20-23 pounds per square inch (psi). "Substandard pressure" is defined as 10 psi or less. Pressure of 30 psi is desirable.
13. Low water pressure is an inconvenience to residents in the East Fort Bragg Pressure Zone and South of Chestnut. It could create a crisis at Mendocino Coast District Hospital in the event of a large fire or a water main break.

[3] The Fort Bragg Water Enterprise publishes an annual water quality report which is available on the City website at www.city.fortbragg.com

[4] One acre-foot is equivalent to 325,850 gallons.

[5] Storage consists of two 1.5 million gallon tanks at the treatment plant and one 300,000 gallon tank located near Highway 20; treatment capacity is based on the plant operation manual.

[6] Boundaries of the East Fort Bragg Pressure Zone are: N-Sherwood; S-Noyo River; W-Lincoln; E-California

14. Maintaining Fort Bragg's 260 fire hydrants is a top priority. Temporary workers, including high school students, are hired and supervised for the summer job of exercising all hydrant valves, and cleaning and painting the hydrants.
15. Water is metered as it is drawn from the source, when it enters clean water storage tanks, and again when it is delivered to end users.
16. Fort Bragg's Local Agency Formation Commission (LAFCO) Municipal Services Review states that 17% percent of the water treated by the City in 2005-06 was "lost" between the clean water storage tanks and the total water metered by end users.
17. This unexplained loss far exceeds an acceptable industry standard of 10-11% and costs ratepayers substantial sums annually. In 2005-06, the cost was estimated at $213,000.
18. The District has conducted leak studies three times in recent years and has undertaken major maintenance and upgrades on pumps, pipes, and meters.
19. Some water is still lost due to leaks in the system. Because most pipes are shallow, leaks are identified and repaired quickly.
20. Some of the apparent loss is explained by illegal connections. Other unmetered water is used to flush hydrants and mains, and by the Fire Department for drills and emergency response.
21. Another likely explanation for the apparently excessive loss is that aging water meters were under-reporting the amount of water reaching end users.
22. Operators now maintain all collection and treatment plant meters according to manufacturer recommendations.
23. More than 2800 new water meters have been acquired through a ten-year lease-to-purchase contract with an annual payment of approximately $100,000.
24. It takes three hours to read the new meters electronically from a vehicle compared to 160 man/hours to read the old meters on foot. The City plans to change the billing cycle from bi-monthly to monthly.
25. The first full reading of the new meters in fall 2007 suggested that the old meters were recording less water than was actually reaching end users. The City has received complaints about increased bills, but this may be due to more accurate recording of the amount of water used.
26. Data from multiple billing cycles will permit more accurate calculation of the amount of water lost between the treated water tanks and the end users.
27. The existing *Fort Bragg Water System Study and Master Plan* was developed in 1986 and is no longer a viable management tool. Updating this report is a recognized priority. Interactive computer modeling of flows and pressures will be invaluable in planning for future development.
28. Those directly responsible for water treatment and distribution have not been full participants in long-term planning for the Water Enterprise, or in preparation of the City's LAFCO Municipal Services Review, or in related aspects of a Fort Bragg City emergency response plan.
29. The current level of staffing is the minimum needed to monitor and maintain the water treatment and delivery systems. Any further reduction in the number of certified operators will result in deferred maintenance and system failures.

30. Priorities for capital investment include replacement of backup generators to ensure water delivery during power outages, and a second blower for the water treatment plant so original equipment can be shut down and serviced.
31. Funding for system maintenance and upgrades comes from user rates, connection fees, loans and grants.
32. In 2005, the District secured a zero-interest loan through the California Department of Health Services to upgrade the Madsen Hole pump station and to clean and rehabilitate the water storage ponds.
33. Current rates became effective May 1, 2006.
34. A rate study is required by law before any change can be implemented. In fall of 2007, the Fort Bragg City Council approved $47,000 for a grant-funded study of rates. A presentation of findings from this study is scheduled for the City Council Meeting on March 24, 2008.

Recommendations

The Grand Jury recommends that the City of Fort Bragg Water Enterprise:

1. Develop a management report to determine the difference between the amount of treated water leaving the plant and the amount delivered and billed to end users; include the amount and cost of this "lost" water in the City's annual Water Quality Report (Findings 15-17, 19, 21, 25 and 26).

2. Authorize funding for development of a comprehensive water enterprise long-term plan, including interactive computer modeling of flow and pressure in areas where problems have been identified, and where development is anticipated; fully involve the Water Treatment and Distribution Superintendents in the planning process (Findings 11-13, 27 and 28.

3. Examine the East Fort Bragg Pressure Zone and recommend necessary upgrades to the system (Findings 11-13, 27 and 30).

4. Involve the Superintendents for water treatment and distribution in water-related aspects of emergency response planning (Finding 28).

5. Maintain the number of certified operator positions for maintenance of the water treatment and distribution systems at no less than 2006-07 levels (Finding 29).

Comments

Most of the concerns that surfaced during this inquiry can be attributed to scarce financial resources and deferred maintenance of an aging system. Providing an adequate supply of potable water will be an on-going challenge. End users can anticipate continuing pressure to conserve water. They would be well advised to plan for mandatory rationing during periods of drought. They may also expect periodic rate increases to cover the cost of maintaining and upgrading the system.

The Fort Bragg Water Enterprise Treatment and Distribution Superintendents are to be commended for their professionalism and commitment to maintaining systems that are essential to the well-being of all who live, work, or visit in the area they serve.

Required Responses

Fort Bragg City Manager (All Findings; All Recommendations)

Fort Bragg City Council (All Findings; All Recommendations)

Fort Bragg Director of Public Works (All Findings; All Recommendations)

Requested Responses

Mendocino County Local Agency Formation Commission (LAFCO)
(All Findings; All Recommendations)

The Grand Jury Report Process

The role of the Mendocino County Civil Grand Jury is to oversee and shed light on local and County government. Jurors conduct oversight inquiries and investigate matters of public interest. Any individual can file a complaint with the Grand Jury using forms available online at **www.co.mendocino.ca.us/grandjury**.

A Grand Jury inquiry begins when a topic is approved by a minimum of 12 of the 19 seated Jurors. A committee then undertakes extensive research and drafts the report. Findings are verified against documents and interview notes and are reviewed for accuracy with key individuals in the agency of interest. The draft is then reviewed by an internal Edit committee and must receive approval by the Full Panel. It is then sent to County Counsel and to the Presiding Judge for final review before public release.

Members of the 2007/2008 Grand Jury

Bob Coppock
Brad Hunter
Kathy Johnson
Nancy Kleiber
Lois Lockart
Chas Moser
George Pacheco
Lillian Pacini
Carolyn Pavlovic
Barbara Reed
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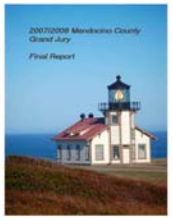

The cover photo for this report was taken at Point Cabrillo Light Station Historic Park by Donald F. Roberts. This report was produced with the generous assistance of Tony and Maureen Eppstein. Information on Point Cabrillo State Historic Park and the Lighthouse Inn is available at www.pointcabrillo.org