

PIPELINE

News & Views From WV Bureau for Public Health, WV Department of Environmental Protection,
& Public Service Commission of WV

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The Pipeline

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Internet Based Training for Community and Non-transient Non-Community Public Water System Plant Operators

By: Jeffrey E. Smith, RS, WV Bureau for Public Health

Class 1 and 2 operators of Water Treatment plants, serving a population of 3300 or less, are eligible to receive internet based training and use the training towards renewal of their certification.

The Department of Health and Human Resources, Bureau for Public Health, Office of Environmental Health Services, Environmental Engineering Division has contracted with 360water.inc to provide this training. All you need to do is register on their website and take the training!!!! The Department will pay for the number of classroom hours you need to meet your current renewal requirements through funding obtained from the Environmental Protection Agency Operator Certification Expense Reimbursement Grant.

Just follow the outlined procedures and you will soon have training at your fingertips, it's that simple!

1. On Internet Explorer (IE), go to www.360water.com and click on the login at the navigation bar. Then click the link Here, below "New to 360 water."

2. Register by completing the information and make sure the plant name you enter is WVDHHR and the state you register from is WV. This tells 360water to invoice our office. The wrong information here could

cause an invoice to be sent to you.

3. When you see your name in the upper right hand corner, you know you've logged in OK.

4. Go to "Operator Education", click a course title and select an approved course.

5. Click "Audit"—This will allow you to receive an audit certificate once you have completed and passed the class.

6. Once per month 360water will notify us of who audited their courses, we will verify the eligibility of Class 1 and 2 operators and then 360water will bill WVDHHR for classes the eligible operators took, to the limits of their renewal requirement.

7. Once WVDHHR pays the invoice the operator may print a Valid Certificate to be used for renewal purposes.

8. Submit copies of valid certificates with your application for renewal.

Note: You should allow 60-90 days lead time from taking the class to receiving a valid certificate since billing occurs only once per month. In other words, take these classes at least 60 days prior to the expiration date of your certification.

For further help or login assistance please contact 360water directly at 1-866-923-3600.



FY2006 Intended Use Plan

By: Rosalie Brodersen, WV Department of Environmental Protection

The draft FY2006 Intended Use Plan and FY2006-07 Priority List is available for review and comment for the next fiscal year. The hearing will be held July 27th at 1:00 p.m. at the Water Development Office in Northgate Industrial Park.

Authorization

By: Rosalie Brodersen, WV Department of Environmental Protection

It has come to our attention that several projects have been advertising for construction contracts WITHOUT the approval of the SRF program. There are several reasons for the SRF to be involved with the schedule of the project and the construction when funds, either Environmental Protection Agency grants or SRF loan dollars, are involved.

- 1 - With the Grant or Loan program, there are several federal requirements that must be met. Minority and Women Owned Business Enterprise “good faith” efforts must be undertaken prior to the formal advertising.
- 2 - The right of way issues must be addressed so that when the loan closes, there is no delay in closing or in proceeding through construction without site problems.
- 3 - NPDES Permit application/modification/renewal must have been applied for and in process. The final permit must be issued prior to loan closing.
- 4 - PSC Certificate must be in process and issued prior to loan closing.
- 5 - The accountant’s pre-certificate must review the proposed funding and expenses and indicate sufficiency and compliance with prior bond documents.

All these items can effect a delay in a project if not addressed timely and properly.



Tapper Asks:
Have you contracted for your annual audit and PSC annual report preparation?

Sodium Hypochlorite-Some of the Questions, Some of the Answers

By: Jonathan Fowler, P.E., Staff Engineer, PSC Engineering Division

Many utilities have recently become aware of the need to review the safety implications and various liabilities associated with using gaseous chlorine in their treatment process. Consequently, these utilities are often finding that an alternative disinfectant, liquid sodium hypochlorite solution (bleach), makes sense in their individual circumstances. For those utilities who have either already elected to convert to bleach or, those who are considering such a change, the following "Q&A" discussion is provided in the hope that it may offer some useful information.

Q: Just what is sodium hypochlorite, isn't it the same thing as the common household bleaches that we are all familiar with?

A: Yes, to some extent, the bleach solutions used by utilities for disinfection are quite similar to the household bleaches in common everyday use. Chemically, both are essentially a solution of chlorine and sodium hydroxide. However, the disinfectant bleaches made for use by utilities do have important distinguishing differences.

Q: What are the important differences between household or laundry bleaches and utility-grade bleaches?

A: First, and most obvious, the strength of a utility-grade bleach is two to three times that of the common household product. A typical, fresh, household bleach is 5-6% available chlorine. A typical utility-grade bleach contains 12%-15% available chlorine. Second, and this is quite important, a utility-grade bleach is quite pure when compared with a common laundry bleach. This high level of purity is very important for many reasons and must be insured through proper purchasing specifications.

Q: Why is bleach purity so important for a utility?

A: Bleach is not a particularly stable solution, many users of bleach may not be aware that all bleach solutions decompose with time. Several factors

affect the rate at which a bleach solution decomposes, one important factor is the pH of solution and a second important factor is the concentration of certain contaminants. To maintain an acceptably high pH, it is good practice to specify that an excess of sodium hydroxide be present in all bleach delivered to your facility. (Sodium Hydroxide should be between 0.1 and 0.4 percent, by weight.)

Next, virtually all bleaches contain unwanted contaminants, including various metals (Fe, Ni, Cu, etc.) as a result of their manufacture, storage and transport. These metals will catalyze the decomposition of bleach to varying degrees. Thus, it is important to limit the concentration of these unwanted metals. (I.e. Iron <0.5 mg/l; Copper <0.05 mg/l; Nickel <0.05 mg/l)

Finally, since bleach is being added to your finished water (in the case of water utilities) you do not want the bleach to contain any material which would degrade the quality of your product. Always insure that your bleach supplier is currently certified under the American National Standards/National Sanitation Foundation Standard 60 (ANSI/NSF 60). It is good practice to also limit the concentration of Chlorate, since this compound is an overall indicator of bleach quality. (Chlorate <1,500 mg/l). Also, if you use ozone in your treatment process you should be aware that some bleaches may contain bromate which is a very bad actor when combined with ozone in a treatment process.

Q: Are there guide specifications which we can use to assist us in purchasing good quality bleach for our system?

A: Yes, there are reliable sources of guidance when it comes to purchasing your bleach. First, the American Water Works Association (AWWA) publishes a standard specification for bleach for use in water treatment. This specification, which is issued under AWWA Standard B-300, is available from the AWWA at their on-line library

(awwa.org) and will provide a good basic specification or, "starting point", for utility's to develop their own specification for bleach purchasing. Likewise, the Chlorine Institute offers much valuable technical information regarding sodium hypochlorite on their web site. This data includes a technical paper on the bromate issue and comprehensive safety and handling guides (Pamphlet 65 and Pamphlet 96) for bleach, available at nominal cost, on this organizations web site.

(chlorineinstitute.org). Also, another good bleach specification, along with a wealth of general information on the manufacture, use, handling, storage and other aspects of bleach is available from the Powell Fabrication and Manufacturing, Inc. on their web site (powellfab.com).

Q: You mentioned that all bleaches will decompose over time, how can we minimize this decomposition?

A: First, insure that you purchase a high quality bleach having an excess of sodium hydroxide and containing low concentrations of deleterious materials, often this will mean that you should specify and purchase a filtered bleach solution. Second, make sure that your in-plant handling and storage facilities do not add contamination to the beach. Use proper materials of construction for all piping, pumps, tanks, hoses, fittings and all other items which will come into contact with the bleach solution. Finally, keep your bleach storage area cool, elevated temperatures will greatly accelerate the rate of decomposition. Do not store drums or containers of bleach outdoors in the direct sunlight, make sure that bulk storage tanks are protected with some type of cover (shed roof, etc.) and are protected from direct sunlight.

Q: Speaking of the materials of construction, what materials are OK with bleach and what materials should we avoid?

A: Well, first you should recognize

Are You Ready? Are You Prepared for an Audit?

By: Randy Lengyel, Utilities Analyst III, PSC, Water and Wastewater Division

The Public Service Commission receives periodic requests from Public Service Districts, Associations and Municipalities for an outline of exactly what records and documents should be available when an auditor from the Water and Wastewater Division visits their office. The auditor is usually there because a utility has filed a rate case or a municipal appeal has been invoked. The auditor's job is to examine the utility's books and records, to review and analyze its rates and charges, and to also offer suggestions for improved office operations.

The auditor, in most instances, sends the utility a letter or contacts them by telephone with a list of items that need to be made available during the field visit. These items typically include the following:

- Cash Disbursement Journal and General Ledger. If you are computerized, a detailed General Ledger will reflect all transactions for the 12-month period by account number. A list of all items charged to plant accounts.
- Sales Journals with customer billing and sales records. This should include the gallons consumed by each customer on a monthly basis. If it's a water Utility, a list of customers separated by meter sizes.
- Adjusted Trial Balance and details of all adjustments.
- Paid invoices for the period to be examined, usually July 1, to June 30, in addition, invoices for the month preceding the test period and the month following the end of the test period.
- Account information regarding whether the Utility books plant additions as an asset or as an expense.
- All payroll information, including the quarterly Workers Compensation Reports, the quarterly

State Unemployment Reports, the quarterly F.I.C.A. Reports, and the monthly Retirement Reports.

- A list of current employees with current wage rates should be available. All payroll information should be broken down between full time and part time employees. A distinction between which employees receive insurance and retirement should also be made. Any future increases in employees' wages must be accompanied with Board minutes approving them.
- A list of all current loans of the Utility, both short and long term, any bonding agreements, and the annual debt service of each. If you anticipate any major expenditures, you should contact the auditor or engineer prior to their visit if possible. If you wish to purchase a new truck, paint a water tank, etc., you would first need to produce Board minutes reflecting approval, the estimates of the costs, and finally a letter from the lending institution stating the amount to be borrowed, the fixed interest rate, and the number of years of the loan.
- A list of all bank accounts and Municipal Bond Commission accounts as of the end of the test period, and balances of each account. Reserve requirements and balances should be included in this list.
- Board minutes for the test period and up to the last meeting.
- A list of all property insurance policies in effect and the annual premiums of each.
- A list of all accounts written off in the test period as being uncollectible, by customer name and account number.
- All canceled checks and bank statements for the test year.
- A copy of the Utility's last 3 an-

nual audits.

- Documentation of any item that will be significantly increasing over the next 12 months, such as insurance, chemicals, purchased water, etc.
- Any pertinent information concerning resale customers of the Utility. This also applies if the Utility is a resale customer of another Utility. An example of this would be an increase in treatment or purchased water costs.
- Any agreements or contracts with other Utilities. This would include operation and maintenance, sewage treatment, purchased water, billing and collecting, and termination.

This list of information may seem voluminous, but for the most part it is all essential and required in order for the auditor to make a thorough and detailed review of the utility's financial operations. So it is important for utilities to know what information is required and to have it ready and organized for the auditor to review.

In addition, the auditor should be made aware of any future projects for needed upgrades and/or new customers as well as when you plan on filing this project with the Commission. This would also include any plans to reduce Inflow and Infiltration, water losses, and any moratorium concerns. Depending on the situation, the Utility may need emergency or interim rates or expedited treatment, this must be included in the Utility's application to the Commission.

The auditor will use the most recent fiscal or calendar year, depending on how the Utility files its annual reports. The auditor and engineer are there to help you, whether it's a rate case or an investigation. Staff appreciates the Utility's preparation and cooperation in providing this information.

Is Your Utility Financially Healthy?

By: Susan Brown, Utilities Analyst II, PSC, Water and Wastewater Division

The purpose of this article is to show you how to use a Cash flow Statement to determine if your utility is financially healthy, show you financial ratios that will help you define the problem and give you ideas on how to nurse your utility back to health. A new fiscal year has begun and many of you are busy preparing annual reports for the Commission. Now is a perfect time to see if your utility is financially healthy. To do that you will need to complete a cash flow analysis.

WHAT DOES A CASH FLOW STATEMENT LOOK LIKE?

The Cash Flow Statement (a sample is provided at the end of this article, on Page 7) shows that the total of operating revenues less Operation and Maintenance Expenses, and Taxes Other Than Income Taxes, Debt Service and Capital Additions equals Total Cash Requirements. As you can see:

Cash Available for Debt Service (A) = Total Available Cash - Total Cash Requirements (Total Operating Expenses) Remaining Cash = Cash Available for Debt Service - Total Debt Service Requirement Surplus/Deficit)

Debt Service Coverage Factor = Cash Available for Debt Service (A) ÷ Sub-Total (B) (Total Debt Service Req.)

DO YOU HAVE ENOUGH WORKING CASH?

The first red flag you may see is your Remaining Cash is a negative number which could be due to extraordinary expenses from flooding, loss of customers as well as fines and expenses due to violations of EPA standards. Remaining Cash should be at least a three to five year average of your plant additions. In other words, you take the plant additions for the last three to five years and calculate the average. There should be enough money in Surplus to cover such expenses as replacement of pumps, meters, and other scheduled improvements to the system. Recently Staff, in case rate cases, has compared the average plant additions with 1/12th of the operation and maintenance ex-

penses and built into rates the higher of the two numbers.

DO YOU HAVE ENOUGH COVERAGE ?

The second red flag you may see is the Debt Service Coverage below the requirements stated in the bond documents. If you have debt service payments, in your bond documents there will be a coverage requirement, usually around 115%, to insure that you have adequate cash to make your bond payments. In the cash flow statement, just below the Sub-Total, you will find Debt Service Reserve Requirements and Renewal and Replacement Reserve. Debt Service Reserve is calculated by multiplying the annual debt service by 10%. This is a reserve required in the bond documents. The Renewal and Replacement Reserve is 2.5% of the metered sales. This reserve account is to be used for maintaining the system and is also a requirement of the bond documents.

ARE THERE OTHER TESTS I CAN USE TO EVALUATE MY UTILITY?

As I was reviewing the Managers' manual to prepare for the upcoming seminar in August, I realized the information in the Utility Management book just touched the surface as far as providing ratios to use in evaluating the financial health of a utility. In preparing my presentation for the seminar I ran into an article titled, "Georgia Water Series – Issue 3: Evaluating Water System Financial Performance and Financing Options" written by Jeffrey L. Jordan, University of Georgia. Jordan states, "A financially troubled utility will be unable to fund required maintenance of facilities and unable to expand the system to accommodate new growth."

Jordan's article also says the utility should have enough working capital (cash on hand) to cover forth-five days of operation at a minimum. Many utilities may keep this reserve in their checking account but it may be better to have written policy that states the minimum amount of money that needs

to be in the checking account. If you must write checks so the balance in the checking account goes below the minimum, then you need to make it a priority to get the balance up to the minimum as soon as possible. I have seen many boards/councils that believe if they have money in the checking account it is OK to spend it any way they wish. The best run utilities that I have seen don't spend any money unless it is prudent. I prefer for the managers to treat the money as if it belongs to the customers because, guess what, it does!

The article suggests four tests to determine a utility's financial viability.

Test 1 – Operating Budget: revenues minus expenses should be greater than or equal to zero.

Test 2 – Operating Cash Reserve; Operating cash reserve should be greater than or equal to 1/8 (45/365 – remember the 45 day reserve) of annual operating and maintenance expenses.

Test 3 – Capital Cash Reserve: Capital cash reserve should equal capital replacement cost. Think of this reserve as Remaining Cash in the Cash Flow Statement.

Test 4 – Household Income Index: Average monthly rates should be less than or equal to 1.5% of median household income. Basically, Test 4 provides a means of determining how much money the customers in the service area can afford to pay for water.

WHAT RATIOS CAN I USE TO EVALUATE MY UTILITY?

In the Managers' Seminar we will discuss the Operating Ratio and the Coverage Ratio. The Operating Ratio is as follows:

Operating Ratio = $\frac{\text{Total Revenue}}{\text{Operating Expenses}}$

To calculate the Coverage Ratio:

Coverage Ratio = $\frac{\text{Cash Avail.} - \text{Debt Ser.}}{\text{Debt Service Sub-Total}}$

While these calculations give us

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Sodium Hypochlorite—Some of the Questions, Some of the Answers ... *Continued from Page 3*

that bleach is a very challenging material to handle. It is an extremely aggressive oxidizing substance and it is corrosive to all common metals. Further, bleach, as a strong oxidizer, will eventually attack non-metals (plastics, fiberglass, etc.) as well. This having been said, bleach can be, and is, safely handled with a variety of materials of construction.

For piping systems, the most common material used for handling bleach solutions is PVC, which has established an excellent track record in this application. However, care must be taken in selecting the proper solvent cement (“glue”) for use with bleach solutions. Always consult with the pipe manufacturer and take the extra time and effort to secure the recommended solvent cement. Do not assume that the standard “hardware” glues are acceptable for this critical application. Also, carefully follow the recognized industry standards with respect to piping system

support, allowances for expansion/contraction, and for providing physical protection to the PVC piping system.

Shut-off and block valves have always been a source of problems in bleach piping systems. This is due to the corrosive/oxidizing character of the bleach as well as the fact that one decomposition pathway for bleach results in the release of oxygen gas. This decomposition product can build-up to extremely high pressures in dead-end areas of the piping system and has been known to cause ball valves to literally explode due to the pressure of oxygen gas trapped inside the ball. At the present time, vented-ball valves and, preferably, diaphragm valves, are recommended for shut-off and block valve service.

Regarding storage tanks, one must be aware that, with the exception of a few expensive exotic materials (I.e. Grade II Titanium), there is no material

available for constructing a “permanent” bleach storage vessel. All other materials including all plastics and fiberglass and all presently available coatings, will be attacked by bleach and will eventually need to be replaced. Typically, a high-quality, properly-specified and constructed fiberglass or polyethylene storage tank can be depended upon to provide up to ten years of service when storing bleach. Thus, make sure that your facility is designed so that these tanks can be easily replaced in the future. Also, as with any other chemical storage tank, insure that proper secondary containment is provided so that spills can be contained in the event of a primary tank leak or vessel failure.

Mr. Fowler can be contacted at the Public Service Commission, Engineering Division via email jfowler@psc.state.wv.us or by phone at 1-800-344-5113.

2005 Seminars

Following is a list of the remaining seminars for 2005:

September 8 - 10, 2005	PSD Board Members Seminar	Blackwater Falls State Park
October 18-19, 2005	Safety Seminar	Pipestem State Park
October 20, 2005	Main Extension Seminar	Pipestem State Park
October 21, 2005	Termination Seminar	Pipestem State Park

The seating capacity for these seminars is limited to 50 people per class. You can register on-line at www.psc.state.wv.us or by completing the brochures that are mailed three to four weeks prior to each seminar. You may contact Drema Witt at (304) 340-0440 for additional information or if you have questions.

Is Your Utility Financially Healthy?continued from Page 6

the financial strength of the utility, there is a wide variety of ratios we can use to monitor the financial health of your utility. Following are a few of the ratios I feel can be helpful.

NET INCOME/ANNUAL OPERATING REVENUE: (Profitability) This ratio shows how much the utility earns as net income for every dollar of operating revenue made. According to the resource Center at Fort Worth, Texas, the national average for profitability in 1992 was 12.8%.

CURRENT RATIO = CURRENT ASSETS/CURRENT LIABILITIES: (Liquidity) A viable system will have current assets valued at 1.5 times its liabilities.

OPERATING REVENUES/TOTAL ASSETS: (Growth and Efficiency) Operating revenues divided by total assets equals a measure of the ability of a utility to generate revenues from its assets. The higher the ratio (the closer the ratio is to 1.0), the higher the productivity of the assets.

OPERATING REVENUES/ACCOUNTS RECEIVABLE: Operating revenues divided by accounts receivable shows how many times the receivables are generated and collected during the year. This ratio gives a sense of speed of the collections.

CURRENT ASSETS: A healthy mix of current assets for a utility is 59% in cash, 30% in accounts receivable and 6% in inventory.

In addition to the ratios, you need to look at your receivables aging account to ensure that you are following the rules in terminating service in a timely manner. If you have receivables that are years old you may want to write them off as bad debt. If you took a written application signed by the customer, the old debt remains collectable for 10 years. If it was a verbal agreement with the customer the old debt remains collectable for only 5 years.

Once you have used some or all of these ratios, then what do you do? If

your utility is doing well, don't change anything, just continue to monitor its condition. But, if your utility is in financial trouble then you can fall back on the ratios that need improvement. If the ratio for Operating Revenues/Accounts Receivable is low you may need to look at your collections policies. If your current ratio is low you have too little cash. You should look at your expenses and make sure you aren't spending money too freely. If

you can't improve on your collections or expenses then you may need to raise rates. At that point you may want to look at the Test 4 to get an idea of how much money your customers can afford to pay for your services.

It isn't easy running a financially healthy utility. It takes a lot of time, effort, and analysis. If you have any questions or need assistance please feel free to call me. I'll do my best to answer your questions.

County Public Service District Cash Flow Statement Year Ended June 30, 2005

	Per Books \$	Going-Level \$
AVAILABLE CASH		
Operating Revenues	<u>50,000</u>	<u>63,077</u>
Total Available Cash	50,000	63,077
CASH REQUIREMENTS		
Operation and Maintenance Expenses	35,000	40,000
Taxes Other Than Income Taxes	<u>5,000</u>	<u>5,000</u>
Total Cash Requirements	40,000	45,000
Cash Available for Debt Service (A)	10,000	18,077
DEBT SERVICE REQUIREMENTS		
Principal and Interest	<u>15,000</u>	<u>15,000</u>
Sub-Total (B)	15,000	15,000
Debt Service Reserve Requirements (10% of Debt)	0	1,500
Renewal & Replacement Reserve (2.5% of Revenue)	<u>0</u>	<u>1,577</u>
Total Debt Service Requirements	<u>15,000</u>	<u>18,077</u>
Remaining Cash Surplus (Deficit)	(5,000)	0
Debt Service Coverage Factor (A) (B)	66.7%	120.51%
OPERATING RATIO:		
Total Revenues		
Operating Costs	= 90.91%	100.00%
COVERAGE RATIO:		
Total Revenue - Non Debt Expenses		
Debt Service	= 66.67%	100.00%



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