The following is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE and CAPABILITIES: Chemical feeding can serve a number of purposes including feeding chlorine for disinfection and oxidation of certain contaminants such as iron, manganese, hydrogen sulfide, tannins and organic complexes. It is also useful for controlling pH levels. Selecting the right chemical feed pump is critical for proper treatment. The following formula applies whether disinfecting, oxidizing or controlling pH:

Well Pump Output (gpm)	X	Required Dosage (ppm)	X	1440	/	Solution Strength (ppm)	=	FEED PUMP OUTPUT (Gallons per Day)

Well Output Rate - Use the following formula for determining pump capacity:

HOW TO DETERMINE PUMP CAPACITY

1. Open any faucet and run until pump turns “on.”
2. Close faucet and let pump fill pressure tank and turn “off.”
3. Open any faucet and collect all water discharge until pump turns “on.”
4. When pump turns “on,” immediately close faucet and start timing pump cycle.
5. When pump turns “off,” record cycle time to refill pressure tank (in “seconds”).
6. Measure total number of “gallons” collected in step #3.
7. Divide the number of “gallons” collected in step #3 by the number of “seconds” in step #5.
8. Multiply the answer derived in step #7 by “60.”
9. The answer in step #8 is the average pumping capacity of the system.

(NOTE: Make certain no other water is being used during this test)

Example

Number of “gallons” collected during draw-down (step #3) = 9
Number of “seconds” in pump cycle to refill tank (step #5) = 72
GPM = (gallons collected / seconds in cycle) X 60
GPM = (9 / 72) X 60
GPM = .125 X 60
GPM = 7.5

Dosage Required - The following are chlorine dosage requirements for common water constituents:

For Every	Chlorine Required .....
1 ppm Hydrogen Sulfide	3 ppm
1 ppm Iron	1 ppm
1 ppm Manganese	1-2 ppm
1 ppm Tannin	1-3 ppm

Simply multiply the required amounts of chlorine by the ppm presence of each contaminant and add them together. Also, remember that it is usually necessary to have a chlorine residual of, say, 1 ppm after contact time. Whatever answer you determine, add “1 ppm” for the residual.

Solution Strength - The following are strengths of typical chemicals for feeding:

Chemical	Strength
5.25% Chlorine Bleach	52,500 ppm
12.5% Chlorine Bleach	125,000 ppm
Potassium Permanganate (1/4# per gallon water)	30,000 ppm
Polyphosphate (1# per 10 gallons water)	12,000 ppm
Soda Ash (.926# per 1 gallon water)	10% Solution

SAMPLE CALCULATION:

You've determined that the pump capacity was 10.5 gallons per minute. There are 2 ppm Iron; 4 ppm Hydrogen Sulfide; and, a 1 ppm Residual is desired. Simply multiply the 2 ppm Iron by its dosage requirement factor of 1 (2 X 1 = 2); multiply the 4 ppm Hydrogen Sulfide by its factor of 3 (4 X 3 = 12). Add the totals (2 + 12 = 14) then add the residual amount to that total (14 + 1 = 15) for the dosage required. If you are feeding 5.25% chlorine bleach full strength, you can now calculate the above formula to determine the number of gallons per day that will be fed in this example.

(10.5 gpm) X (15 ppm) X (1440) / (52,500) = 4.3 gallons per day

In this example, 4.30 gallons of chlorine bleach will need to be fed to insure that all contaminants are oxidized and a 1 ppm residual of chlorine is left over.

It is now necessary to choose a chemical feed pump that will deliver 4.3 gallons of chlorine in a 24 hour period. For example, choosing a 7 gpd with a maximum output daily would be a correct choice. However, a pump should not be set below 50% of its setting. To check your selection, simply divide the required output by the capacity of the pump... in this case, 4.3 / 7.0 = 61.43%. Therefore, the setting would be at 61% and above the 50% mark. If, however, you were diluting the chlorine (say 3 parts water to 1 part chlorine), you would need to select a 24 gpd since the daily output would be 17.2 gallons of solution. (12.9 + 4.3 = 17.2) Remember, proper sizing is critical! Check the individual specification sheets and contact your Distributor or CSI with questions.