Small Water Company Tutorial

Planning for Financial Reserves

Paul Lego, Board Member
San Andreas Mutual Water Company
(Engineer and financially savvy, but not a CPA)

Poll #1: How many of you have a detailed reserve analysis?

Poll #2: How many of you are raising enough reserves annually?

Why Create Financial Reserves?

- Operating profitably is fairly obvious:

  Operating revenues > operating costs

- Capital replacement costs are not:

  Pipes, tanks and wells have long lives (25-50+ years)
  Inflation is Insidious ($100 in 1971 = $661 in 2021)
  The Future is Uncertain
  Murphy's Law IS certain!

- Most mutual water companies are not billing enough to cover future repair and replacement
- Financial reserves explicitly deal with this issue

Why Create Financial Reserves?

California AB54

14301.3 (b) A mutual water company that operates a public water system shall maintain a financial reserve fund for the repairs and replacements to its water production, transmission, and distribution facilities at a level sufficient for continuous operation of facilities in compliance with the federal Safe Drinking Water Act

How to Figure Out Reserves

- Make a list of your assets (wells, tanks, pipes, etc)
- Note the year they were originally installed
- Estimate how long they should normally last
- Calculate how many years they have left
- Estimate the cost to replace them today
- Factor inflation into the picture for future costs
- Divide the future replacement cost by the life of the asset to get the annual reserve requirement
- Multiply the annual reserve requirement by the current age to get today's reserve requirement

Sample Reserve Calculation

- Asset #1 = 400 ft deep, 150gpm Well
- Installed in 2001
- 40 year total estimated life
- 20 years of remaining life (2041)
- Replacement cost today = $100K
- Replacement Cost in 2041 (@ 2% infl) = $148K
- Annual Reserve Req = $148K/40yr = $3,700
- Total Reserve Req Today = $3,700 x 20 = $74K

Reserve Analysis Assumptions

- Asset Lives and Today Replacement Costs:

  Wells = 40 years, $100K
  Pumps = 20 years, $25K
  Tanks = 50 years, $250K
  Valves = 50 years, $40K total
  Control System = 20 years, $25K total
  Generator = 20 years, $60K
  Meters = 25 years, $500 each
  Water Mains = 70 years, $1M per mile
  Sheds = 50 years, $10K each

- Cost to replace 1 linear foot of Water Main ~ $200
- Sourced from several publicly posted water company reserve studies

Sample Reserve Spreadsheet

Todays Date	9/5/21	2021		User Input						
Number of Customers	140									
Cost Inflation Rate	2%									
Asset Description	Asset Life (years)	Year Installed	Age (years)	Remaining Life (years)	Replacement Cost $$$ (2021)	Replacement Cost $$$ (Future)	Amortized Cost/Year (Todays $$)	Reserve $$$ Needed Today	Amortized Cost/Year (Future $$)	Reserve $$$ Needed (Future)
Well #1	40	2002	19	21	$ 100,000	$ 151,567	$ 2,500	$ 47,500	$ 3,789	$ 71,994
Pump and Motor #1	20	2021	-	20	$ 25,000	$ 37,149	$ 1,250	$ -	$ 1,857	$ -
Well #2	40	1986	35	5	$ 100,000	$ 110,408	$ 2,500	$ 87,500	$ 2,760	$ 96,607
Pump and Pump Motor #2	20	2008	13	7	$ 25,000	$ 28,717	$ 1,250	$ 16,250	$ 1,436	$ 18,666
Well #3	40	2003	18	22	$ 100,000	$ 154,598	$ 2,500	$ 45,000	$ 3,865	$ 69,569
Pump and Pump Motor #3	20	2003	18	2	$ 25,000	$ 26,010	$ 1,250	$ 22,500	$ 1,301	$ 23,409
Tank #1 (100,000 gallon)	50	2007	14	36	$ 250,000	$ 509,972	$ 5,000	$ 70,000	$ 10,199	$ 142,792
Tank #2 (100,000 gallon)	50	2006	15	35	$ 250,000	$ 499,972	$ 5,000	$ 75,000	$ 9,999	$ 149,992
Tank Valves 6" x 50	50	1990	31	19	$ 100,000	$ 145,681	$ 2,000	$ 62,000	$ 2,914	$ 90,322

Sample Reserve Analysis

	Including Water Mains	Not Including Water Mains
Overall Replacement Cost (2021)	~$5.8M	~$1M
Replacement Cost per Customer	~$41,000	~$7,500
Reserves Needs today (2021)	~$2M	~$500K
Reserve Deficit today (2021)	~$1.9M	~$300K
Reserve Deficit per Customer	~$13,400	~$2,300
Annual Amortization	~$100K	$30K
Annual Amortization per Customer	~$700	~$200

3 wells, 2 100K gallon tanks, 4.5 miles of water main, generator, controls
140 customers

A word about inflation

- Recently, inflation has averaged 2-3% annually
- Inflation makes catching up reserves very hard
- Your reserve account should be invested safely, but at a rate at or above the inflation rate
- If you already are fully reserved and are invested at a return equal to or greater than inflation, you can factor out inflation
- If you aren't fully reserved and invested at a return greater than inflation, you need to catch up!

New Connection Rates

- A good reserve analysis helps inform new connection fees
- New connection fees should approximate total asset replacement cost divided by total users
- Example $5.8M replacement cost divided by 140 users = $41K per new user
- These new connection fees seem really high until you understand the true replacement cost of your system

The Hard Part

- FACT: Most small mutual water companies don't have adequate reserves
- FACT: Building reserves is politically difficult
- FACT: Inadequate reserves are a ticking timebomb

Tools for Building Reserves

- Higher Monthly Base Meter Fees
- Higher Water Usage Fees
- One-time per user assessment
- Multi-year per user assessment
- New Connection Fees

Tools for Building Reserves

Higher Monthly Base Meter Fees

- Easier to explain for building reserves
- Not volume/conservation dependent
- Good for ongoing reserve building
- Can't raise enough money to "catch up"

Higher Water Usage Fees

- Easier to explain in a "drought" environment
- Higher Usage Fees often lower use and total $
- Good for ongoing reserve building
- Can't raise enough money to "catch up"

Tools for Building Reserves

One-time per user Assessment

- Usually a big number and a difficult ask
- Hard to ask if not an “emergency”
- Difficult for low or fixed income users

Multi-year per user Assessment

- Multi-year assessment lowers cost per year
- Somewhat easier for low or fixed income users
- Still a difficult ask
- Leaves reserve assets exposed for longer time

Tools for Building Reserves

New Connection Fees

- Work well if # of users is growing
- Work well if already adequately reserved
- Usually need to be paired with other tools

Financial Statements with Reserves

ABC Mutual Water Company - Profit and Loss

Operating Revenues	**Reserve Revenues**	Total Revenues
Base Meter Fees	**Reserve Fund Fees**	
Water Usage Fees		
Operating Expenses	**Reserve Expenses**	Total Expenses
Electricity	**Well Replacement**	
Administrative	**Tank Replacement**	
Water Testing	**Major Repairs**	
Minor Repairs & Maint		

ABC Mutual Water Company - Balance Sheet

Current Assets	Current Liabilities
Operating Bank Account	Accounts Payable
Reserve Bank Account	Long-term Liabilities
Accounts Receivable	Notes Payable
Fixed Assets	Equity
Equipment	Current Earnings
Accumulated Depreciation	Retained Earnings
Net Fixed Assets	Owners Equity

Reserve Planning Process

- Agree as a board that reserve planning is a priority
- Do a first-cut reserve analysis yourself
- Figure out how bad the situation is
- Communicate the need for reserves to users
- Create a plan to build reserves over time
- Separate operating and reserve accounts if possible
- Get started now – time (and inflation) is your enemy
- Re-examine your reserve situation annually

Take-away tools

- This presentation
- Sample reserve analysis spreadsheet
- My email = pglego@gmail.com