

Case Study:

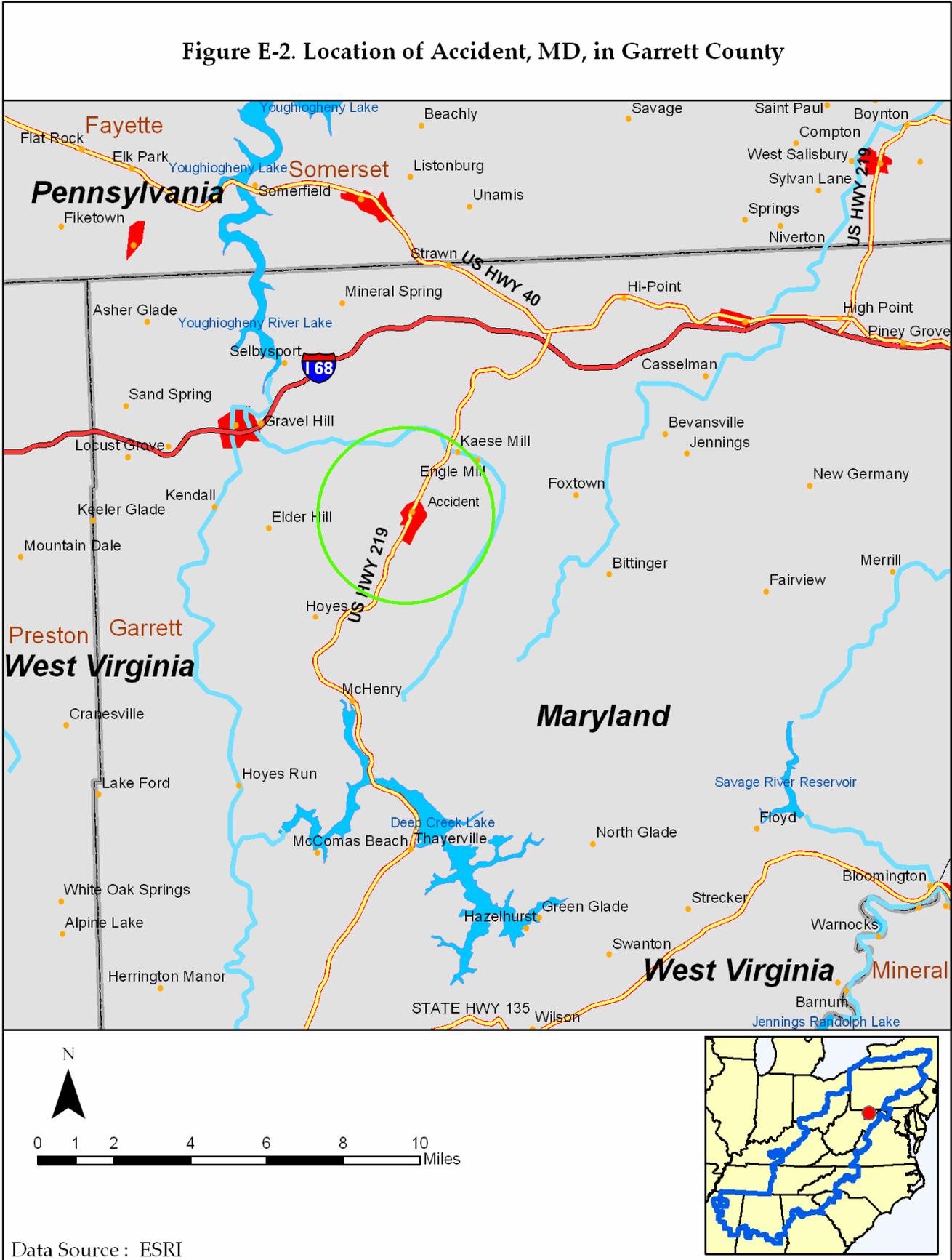
Accident, Maryland

Accident, Maryland, is like numerous other communities in Appalachia: small, very rural, and lacking many of the resources necessary for maintaining basic community services. However, the town has successfully leveraged outside resources, both fiscal and technical, to address its water and wastewater needs. The town has a consent order with the Maryland Department of the Environment because of effluent violations and unmet obligations for completing improvements to its wastewater treatment plant. This case study provides a brief description of Accident and its recent capacity-building efforts (refer to Figure E-2).

Economic Setting

Accident is located in the northeast corner of Garrett County, in the far western end of the state, near the watershed divide between the Upper Potomac and the Youghiogheny river basins. Like many other communities in Appalachia, Accident is agriculturally based. In fact, most of the land in Garrett County is maintained in some form of agricultural use. Accident consists of roughly 0.5 square miles, with one main road and a few secondary streets. Dairy farming is the main source of income for many residents. Other sources of employment are a bank, a country store, a bakery, a laundromat, an elementary school, a church, a car wash, senior citizen facilities, and a gas station.

Figure E-2. Location of Accident, MD, in Garrett County



Data Source : ESRI

Many residents of Accident are retired. The University of Maryland at Frostburg is within commuting distance, so a few students reside in the town. Although Accident has many of the problems typical of communities in Appalachia, including high unemployment and poverty rates and low per capita income, the Appalachian Regional Commission (ARC) considers it a “transitional” community (that is, one that has higher-than-average rates of poverty and unemployment and lower--than-average per capita market income). In 1999 its unemployment rate was 6.8 percent, which was higher than the average rates that year for the United States (4.2 percent) and Maryland (4.4 percent). In 2000 the poverty threshold was \$17,603 for a household of four. The poverty rate in Accident that year was 17.5 percent, compared with Maryland at 8.5 percent and the United States at 11.7 percent.¹ The per capita income in 1999 was only \$11,950, quite low compared with \$25,614 for Maryland and \$29,847 nationwide. The median household income that year was \$22,500, compared with Maryland at \$52,868 and the nation at \$41,994.

Population Trends

Accident has a population of about 350, according to the 2000 Census. That represents an increase of only 4 people since the 1990 census. This population trend contrasts with trends in some other communities in Appalachia. For example, in nearby Berkeley County, West Virginia, population growth is the fastest in the state, the county having experienced a 28 percent increase in the last decade. Much of Berkeley County’s rapid growth is due to its proximity to Washington, D.C., and its relatively low cost of living. Garrett County and other

¹ Appalachian Regional Commission, ‘The Appalachian Region’, www.arc.gov
City-data.com, Accident, Maryland, www.city-data.com/city/Accident-Maryland.html
Calculated from 2000 Census Summary File 3, Table P-87

western Maryland communities have not yet experienced the same growth pressure. Accident is located about 172 miles from Washington, D.C., and 288 miles from Philadelphia and thus is not within commuting distance of these large cities.

Many communities in Appalachia are losing population in response to the reconstruction of the coal mining industry. For example, West Virginia as a whole experienced its greatest reduction in population during the mid-1980s because of declining investments in that industry.² In western Maryland, at the industry's peak (between 1900 and 1918), production was between four and five million tons annually.³ When the industry declined, so did employment rates throughout the region. Decreasing job prospects caused numbers of people, especially younger residents, to leave. As a result of the accompanying decline in their tax base, communities in Appalachia, Accident among them, often have trouble generating the funds necessary to support themselves.

Community Water Infrastructure

Accident is one of a few towns in Garrett County that own and operate their own separate drinking water and wastewater systems. Constructed in 1974, Accident's two systems each serve 197 customers, mostly residential.

The town has the authority to assess taxes, and in 2004 it was considering a tax increase to pay for necessary changes to the system. As might be expected in a

² College of Business and Economics, WVU, Brian Lego, Dec. 17, 1999, 'The population roller coaster: WVU releases a century perspective on West Virginia's population'.

³ Maryland Department of the Environment, 'Abandoned Mine Land Reclamation Program: General Historical Perspective', <http://www.mde.state.md.us/Programs/WaterPrograms/MiningInMaryland/MiningInWestMD/index.asp>

community where most of the residents are living on low or fixed incomes, there was opposition to the proposed increase.

The utility takes readings from only 150 water meters, with a total of 197 hook-ups. Single meters exist at an apartment complex, a senior citizens home, and a trailer park, each containing multiple lines. The systems are considered small, with both the drinking water and the wastewater system containing about 5 miles of distribution and collection system piping.

The sewer system was partially upgraded in 1994 because of leaks in the lines. The original pipes were made from steel and terra cotta. Terra cotta cracks easily, and when water infiltrates through the cracks, the steel rusts, causing a buildup that further deteriorates the piping.⁴ The 1994 repairs included replacing the original pipes with ones made of PVC (polyvinyl chloride), and replacing manholes, castings, and lids.

Because of the physical deterioration of the pipes, inflow and infiltration of stormwater into the sewer pipelines has been the wastewater system's biggest problem. Even after the upgrades in 1994, the system was found to be deficient, with major leaks, illegal tie-ins of roof drains, cracked laterals, and some surface runoff causing pollutant discharge.⁵ As a result, the Maryland Department of Education and the town filed a consent order in 2000 requiring the town to correct the problems with its sewage collection lines.

⁴ Traditional Building, Product Report of the Month, Terracotta Restoration, <http://www.traditional-building.com/3-terra.htm>

⁵ USDA Rural Development, 'Earth Day 2003: Town of Accident, MD', www.rurdev.usda.gov/rd/earthdat/2003/md-accident.html

Capital Needs

The consent order was issued because of pollutant discharge into the South Branch of Bear Creek, which is a state-protected waterway. The pollutant discharge was caused by high flow rates into the plant (above its 50,000 gallons per day capacity) from precipitation and melting snow. The violations reported included elevated levels of biochemical oxygen demand, total suspended solids, and fecal coliform counts recorded over nearly four years.

Accident was directed to submit a facilities plan to be approved by the Maryland Department of Education. Once the plan was approved, the town was put on a schedule to complete Phase I and II of the plan and monitor the effectiveness of its efforts. In addition, the town was required to get the department's permission for any connections to the wastewater system above 20 equivalent daily units. Strict penalties were outlined for noncompliance with the consent order. Currently the town is obtaining bids for work to be completed in Phase I of the consent order. The town expects to meet all conditions and complete all updates on schedule.

Future needs of the wastewater system include repair of deteriorating mortar joints and crumbling blocks on the east wall of the plant, repair of fire hydrants at the plant, purchase of laboratory items, and purchase of a stationary emergency generator for backup.

Other possible improvements include a new computer, a new plow, valve replacements, a pick-up truck replacement, and some telemetry units that will allow for remote monitoring, level sensing, and state regulation monitoring. According to the 1999 Drinking Water Needs Survey administered by EPA, the national average need of a groundwater system serving fewer than 500 people is \$392,020 over the next twenty years. The 2000 Clean Watersheds Needs Survey

estimates that Accident needs \$206,000 of the county's \$14 million in needs to cover rehabilitation, replacement, and upgrades of the system.

Accident does not have a capital improvement plan. Instead it relies on M. Mullan, the town circuit rider, and the Maryland Rural Development Corporation, for advice. Neither Mr. Mullan nor Mr. Murray nor the Accident town clerk was able to estimate or confirm the town's capital needs for the next twenty years.

Most of the water supply system is designed for residential homes, but there are a few other major users, including the laundromat, the elementary school, and the car wash. Two wells and one above-ground water tank supply the drinking water. The town relies exclusively on the two wells, as there are no back-up sources or intakes. Water is supplied by one well at a time, and the town has not had any problems with supply shortages. On average, 61,000 gallons of water are treated and pumped each day.

The water tank is currently in need of repair. Preliminary engineering assessments are being conducted as part of a process to purchase a new tank (estimated at \$285,000). The old tank has been deteriorating because of chemicals such as chlorine and soda ash (sodium carbonate) that are used to treat the water. In 1998 a rubber seal had to be placed inside the tank because of some cracks. To place the seal in the tank, the plant had to drain the tank, repair it, and fill it again. That cost the town roughly \$21,300.

Future needs for the drinking water system include replacing the fire hydrant, installing chlorine leak detectors, and replacing the feed system for the soda ash. According to town officials, the only problem associated with the drinking water system in Accident has been related to the tank. Currently there is no identified contamination or pollution of the town's groundwater source.

Community Resources

Accident has limited government resources. The town clerk works only part-time and is single-handedly responsible for bookkeeping and accounting. Mr. Mullan regularly attends town council meetings and helps with the town's proposal writing. He is paid \$1,500 a year for his assistance. Mr. Murray provides help with technical aspects of upgrades. He is not in the town budget. The water system has two operators, one full-time and one part-time. Neither has been certified, but according to the town clerk, one is in the process of being certified, as required by the town's current grant agreement with the U.S. Department of Agriculture (USDA).

The operators work on repairs but are not well trained to handle large-scale problems. Therefore the town relies extensively on the Garrett County Sanitary District for technical assistance. The Garrett County Sanitary District operates water and wastewater systems throughout Garrett County.

Because of Accident's limited resources, it has not adopted a maintenance plan, so the systems work on a fix-when-broken policy. The town also has orally agreed with the USDA that the systems will remain municipally owned and governed. The town benefits from owning the plants, for it can control rates.

Water and Sewer Rates

Although residents are quite proud that the town owns and operates its own systems, repairs have been a significant drain on the town's limited fiscal resources. In fact, from 1999 to 2001, the town experienced a funding shortfall for maintaining the wastewater system. Over the last several years, water and wastewater rates in Accident have increased to keep up with rising operating and maintenance expenses (see Table E-1). The town charges each customer for 4,600 gallons of drinking water, whether they use all 4,600 gallons or not. It then

charges them for each 1,000 gallons they use above that. As of the last rate increase, effective July 2004, the rates are \$14.05 for the 4,600 gallons and \$3.25 for each additional 1,000 gallons. The town estimates a 5 percent increase in rates over the next five years.

Table E-1. Rates billed for Drinking Water (DW) and Sewer Water (SW)

Year *	DW rate for 4600 gallons	DW rate per 1000 additional gallons	SW flat rate	SW rate for each 1000 gallons used
1994	10.14	2.20	8.87	1.40
1995	10.14	2.20	8.87	1.40
1996	10.44	2.20	9.14	1.44
1997	10.44	2.20	9.14	1.44
1998	10.44	2.20	9.14	1.44
1999	11.48	2.64	10.05	1.58
2000	11.48	2.64	10.05	1.58
2001	11.48	2.64	10.05	1.58
2002	13.80	3.15	12.05	1.80
2003	13.80	3.15	16.50	2.50
2004	14.05	3.25	19.50	3.25
Projected 2005	14.19	3.28	19.77	3.29
Projected 2006	14.33	3.31	20.04	3.33
Projected 2007	14.47	3.34	20.31	3.37
Projected 2008	14.61	3.37	20.58	3.41
Projected 2009	14.75	3.41	20.87	3.48
Projected 2010	14.89	3.44	21.14	3.52

* Rates from 1994 to 2004 are actual rates. After 2004 rates for DW are estimated to increase by 5% in the next five years and a 7% increase is estimated for SW in the next five years.

The wastewater system has had a slightly higher increase in rates, with an extra increase effective in 2003. Service is billed at a flat monthly minimum rate, plus a separate rate for every 1,000 gallons of wastewater produced. In 2004 the base rate was \$19.50, and the rate for each 1,000 gallons was \$3.25. A 7 percent

increase in rates is expected to occur over the next five years to cover maintenance.

On average, the water pumped to each customer is less than 4,000 gallons a month. It ranges from about 330 gallons billed to a single individual to 9,900 gallons to a household of two with a hot tub.

Wastewater is not metered. Therefore customers are billed the equivalent amount of drinking water metered. The capacity of the system is about 50,000 gallons per month, but the system is generally running above capacity, mainly because of the town's inflow and infiltration problems. The average household bill as a percentage of the median household income for the town is shown in Table E-2.

Table E-2. Percent of Median Household Income (MHI) billed for Both Drinking and Sewer Water over time *

Year	MHI (\$) **	Average DW customer billed/year	%MHI	Average SW customer billed/year	%MHI	Combined DW and SW billed %MHI	Percentage increase
1994	21875	121.68	0.56	173.64	0.79	1.35	(n/a)
1995	22000	121.68	0.55	173.64	0.79	1.34	-0.01
1996	22125	125.28	0.57	178.80	0.81	1.37	0.03
1997	22250	125.28	0.56	178.80	0.80	1.37	0.00
1998	22375	125.28	0.56	178.80	0.80	1.36	-0.01
1999	22500	137.76	0.61	196.44	0.87	1.49	0.13
2000	22625	137.76	0.61	196.44	0.87	1.48	-0.01
2001	22750	137.76	0.61	196.44	0.86	1.47	-0.01
2002	22875	165.60	0.72	231.00	1.01	1.73	0.26
2003	23000	165.60	0.72	318.00	1.38	2.10	0.37
2004	23125	168.60	0.73	390.00	1.69	2.42	0.31
2005	23250	170.28	0.73	395.16	1.70	2.43	0.02
2006	23375	171.96	0.74	400.32	1.71	2.45	0.02
2007	23500	173.64	0.74	405.48	1.73	2.46	0.02
2008	23625	175.32	0.74	410.64	1.74	2.48	0.02
2009	23750	177.00	0.75	417.48	1.76	2.50	0.02
2010	23875	178.68	0.75	422.64	1.77	2.52	0.02

* Based on average water used as 4000 gallons a month per customer.

** MHI are estimated as a linear increase, 1999 is actual data.

The highest increase in rates was in 2003, but 1999, 2002, and 2004 all had above-average increases. The average bill varies little from season to season. The total monthly bill in August 2000 was about 675,000 gallons, and in December 2003, about 750,000 gallons (still, on average, less than 4,000 gallons a month per customer).

Infrastructure Financing

Recently Accident had significant success in obtaining outside funds to finance improvements to its water and wastewater systems. In 2001 it received a grant from the Maryland Department of Education worth \$150,000 for improvements to its wastewater system. It has tapped the money four times, and there is a remaining balance of \$55,000.

The first payout, \$40,000, was to Thrasher Engineering in 2001 to engineer a facility plan. The firm presented three sewer alternative rehabilitation plans, and it performed a smoke test and monitored the flow. In 2002 the town paid \$15,000 for engineering design. It paid \$40,000 and \$15,000 again in 2003 and 2004 for engineering design and process billing, respectively.

In 2004 the town received several additional grants and loans including:

- An ARC grant for \$250,000
- A Community Development Block Grant for \$500,000
- A USDA Rural Utilities Service grant of \$1,210,100
- A USDA Rural Utilities Service loan for \$480,000

The USDA loan has a payback term of forty years with a below-market “poverty” interest rate of 4.5 percent. The interest rate is fairly high compared with those on loans provided by the Maryland Department of Education from

the state revolving fund (SRF). The standard rate for SRF loans is 1.1 percent, and rates for disadvantaged communities go as low as 0.4 percent.

Impact of Funding Package

The town plans to refinance the loan in a few years. A look at Accident's repayment plan on the loan of \$480,000 at various interest rates is instructive (see Table E-3). A market-rate loan at 5.25 percent is compared with the poverty-rate loan of 4.5 percent provided by USDA. Additionally the rates for SRF loans are compared for the actual loan amount and for the total amount of funds provided to the town. SRF loans have twenty-year repayment periods as opposed to the forty-year USDA loan repayment time.

Table E-3. Loan Payments at Different Amounts and Rate *

Loan type	Interest Rate (%)	Loan Amount	Monthly Payments	Per 197 customers	Annual Payment	Per 197 customers
USDA (40 years)	4.50	480000	(\$2,173.73)	(\$11.03)	(\$26,084.71)	(\$132.41)
USDA (40 years)	4.50	2940100	(\$13,314.52)	(\$67.59)	(\$159,774.29)	(\$811.04)
Market (20 years)	5.25	2940100	(\$20,078.99)	(\$101.92)	(\$240,947.91)	(\$1,223.09)
SRF (20 years)	0.40	2940100	(\$12,771.44)	(\$64.83)	(\$153,257.25)	(\$777.96)

* The actual loan amount to town was \$480,000 at a 4.5%APR over 40 years provided by the USDA. The total loan and grant amounts totaled \$2.9 million.

The percentage of median household income needed to pay for the drinking water and wastewater needs, plus the loan repayment, can be examined under four scenarios: (1) the actual loan agreement of \$480,000 at a 4.5 percent interest rate over the next forty years; (2) a loan of \$480,000 at the SRF interest rate of 1.1 percent over the next twenty years; (3) a loan for the full amount needed to fund sewer repairs (\$2.9 million) at the SRF interest rate of 0.40 percent over the next twenty years; and (4) a market-rate (5.25 percent) loan for the \$2.9 million over

the next twenty years (see Table 4). The data projections assume no change in number of customers and no inflation in the next five years. Less than 1 percent of the MHI is needed every year to pay for the actual \$480,000 loan; an average of about \$132 is billed to each customer every year (see Table E-3).

Table E-4. Percent of Median Household Income (MHI) Billed for Utilities Needed to Pay Back Different Loan Amounts (Loan amounts from Table E-3)

Year	MHI	%MHI (Drinking and Sewer)	USDA LOAN %MHI of Loan worth \$480,000 (4.5% APR) at an annual payment of: (\$26,085)	Total %MHI	SRF RATE %MHI of Loan worth \$2,940,100 (0.40% APR) at an annual payment of: (\$153,257)	Total %MHI	MARKET RATE %MHI of Loan worth \$2,940,100 (5.25% APR) at an annual payment of: (\$240,948)	Total %MHI
2004	23125	2.42	0.57	2.99	3.36	5.78	5.29	7.70
2005	23250	2.43	0.57	3.00	3.35	5.78	5.26	7.69
2006	23375	2.45	0.57	3.01	3.33	5.78	5.23	7.68
2007	23500	2.46	0.56	3.03	3.31	5.77	5.20	7.67
2008	23625	2.48	0.56	3.04	3.29	5.77	5.18	7.66
2009	23750	2.50	0.56	3.06	3.28	5.78	5.15	7.65
2010	23875	2.52	0.55	3.07	3.26	5.78	5.12	7.64

The lower interest rate available through an SRF loan of this same amount would not reduce the annual payment per customer, but the life of the loan would be cut in half and hence the loan payment would also be cut in half (see Table E-3). If the total amount of funds that Accident has been able to generate through grants had been all from loans, residents would be paying on average an additional 3.3 percent of their MHI in loan repayments. This would be more than twice the amount that the average customer is paying right now. A higher interest rate (5.25 percent) reveals an even higher burden on the residents (see Table E-4).

Conclusion

Accident is an illustration of a small town dealing with the kinds of financial challenges that are common in Appalachia. Often, not enough revenue can be generated through fees to allow for necessary but costly repairs in the basic infrastructure. Accident has done remarkably well in meeting the challenges through grants and loans, providing a good example of the possibility for small towns to find funds. With only a couple of people managing its systems, the town often finds it difficult to meet all the demands and required improvements. It still lacks a maintenance plan, a capital investment plan, and knowledgeable operators with the proper certification. Nevertheless, Accident is providing the basic utility of water to its citizens and working on resolving its wastewater problems. With the amount of funding it has recently acquired, Accident is on the right track.

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