The Ability of Small Communities to Afford Construction of Wastewater Treatment Facilities

by

John Dale Gaeddert

March 1990

50272 - 101

REPORT DOCUMENTATION PAGE	1.REPORT NO.	2.	3. Recipient's Accession

4. Title and Subtitle
The Ability of Small Communities to Afford Construction of Wastewater Treatment Facilities

5. Report Date
Completed Spring 1990

6.

7. Author(s)
John Dale Gaeddert

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
Utah State University
LAEP Department
Logan, Utah 84321

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
U.S. Environmental Protection Agency
Office of Cooperative Environmental Management
499 South Capitol Street, SW A-101-F6

13. Type of Report & Period Covered
Technical Report

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

90-2403 The Ability of Small Communities to Afford Construction of Wastewater Treatment Facilities.

This report is part of the National Network for Environmental Management Studies under the auspices of the Office of Cooperative Environmental Management of the the U.S. Environmental Protection Agency.

This study investigates whether small municipal dischargers can afford to construct wastewater treatment facilities to meet secondary standards. Officials in seven Utah communities were interviewed and each communitie's financial data was reviewed to: characterize the wastewater treatment needs of the community; describe the commuity's financial condition; evealuate community financial options; assess community "ability to pay;" and, identify market constraints. It was noted that a lack of population over which projected costs could be spread negatively affects a community's ability to afford construction of needed wastewater treatment facilities. Consequently, the point at which a project becomes unaffordable to a community is dependent on population, as well as a series of additional factors, including, but not limited to: 1) the required local contribution to project costs; 2) the economic state or fiscal strength of the community; 3) community opportunities to attract outside investors or raise additional revenues for the proposed wastewater treatment project; and 4) viable opportunities for the community to decrease project costs.

17. Document Analysis a. Document Descriptors

b. Identifier's/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
	Unclassified	
	20. Security Class (This Page)	22. Price
	Unclassified	

(See ANSI-Z39.18)

OPTIMAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

DISCLAIMER

This report was furnished to the U.S. Environmental Protection Agency by the graduate student identified on the cover page, under a National Network for Environmental Management Studies fellowship.

The contents are essentially as received from the author. The opinions, findings, and conclusions expressed are those of the author and not necessarily those of the U.S. Environmental Protection Agency. Mention, if any, of company, process, or product names is not to be considered as an endorsement by the U.S. Environmental Protection Agency.

Acknowledgements

I offer my profound gratitude to: the United States Environmental Protection Agency for funding this study; Craig Johnson, Larry Wegkamp, and Bob Drake for their objectivity and realism; five excellent women, Nancy Hess, Christine Kelly, Leah Ann Lamb, Carole Scott, and Elaine Greening for their expertise, enthusiasm and spirit; and, most importantly, Claudia, my deepest friend (and editor) for always being exactly who she is.

Executive Summary

This study investigates whether small municipal dischargers can afford to construct wastewater treatment facilities to meet secondary standards. Officials in seven Utah communities were interviewed and each community's financial data was reviewed to: characterize the wastewater treatment needs in the community; describe the community's financial condition; evaluate community finance options; assess community "ability to pay"; and, identify market constraints. It was noted that a lack of population over which project costs can be spread negatively affects a community's ability to afford construction of needed wastewater treatment facilities. In especially towns of 500 or less, the local financial contribution to wastewater treatment projects is limited by a small population and a limited number of households. Consequently, the point at which a project becomes unaffordable to a community is dependent on population, as well as a series of additional factors, including, but not limited to: (1) the required local contribution to project costs; (2) the economic state or fiscal strength of the community; (3) community opportunities to attract outside investors or raise additional revenues for the proposed wastewater treatment project; and, (4) viable opportunities for the community to decrease project costs (53 pages).

Table of Contents

The Ability of Small Communities to Afford Construction of Wastewater Treatment Facilities

BACKGROUND INFORMATION

With passage of the Water Pollution Control Act in 1948, Congress authorized federal loans to states and local governments for up to one-third of the construction cost for wastewater treatment plants. An amendment to the Water Pollution Control Act in 1956 made grants as well as loans available to states and interstate agencies for "... establishing and maintaining adequate measures for the prevention and control of water pollution." Although funds were appropriated for grants in 1956, no money was provided for loans until the establishment of State Revolving Funds in 1987.

In the 1970s, as public concern over the environment grew, federal expenditures for wastewater treatment capital improvements grew as well. Passage of the 1972 Federal Water Pollution Control Act Amendments (Public Law 92-500) greatly expanded the system of federal grants for the planning and construction of Publicly Owned Treatment Works (POTWs). The 1956 amendments authorized a total of $3 million in construction grants appropriations compared to well over $1 billion in 1972. In 1977, "mid-course corrections" to Public Law 92-500 issued under the Clean Water Act, permitted states to manage the construction grants program. Although states managed the program, authorization of federal grant money for up to 75 percent of construction costs continued.

As the strain on the federal budget increased in the late-1970s and into the 1980s, congressional debate began regarding reducing wastewater construction grant aid to local governments. Enactment of the Water Quality Act in 1987 (Public Law 100-4) culminated 5 years of congressional efforts to revise the Clean Water Act. The construction grants program was a central and controversial issue, as policy makers debated whether and how federal involvement should be phased out. As amended, the 1987 Act extends the program of construction grants for sewage treatment projects through fiscal year 1990. Title VI of the 1987 Act authorizes the Administrator of the Environmental Protection Agency (EPA) to issue capitalization grants through fiscal year 1994 to states for deposit in State Water Pollution Control Revolving Funds (SRFs). From these funds states can provide loans, but not grants, to municipalities for the construction of POTWs.

The decision to discontinue the construction grants program introduced a major change in the financing of wastewater treatment facilities. Prior to the 1987 amendments to the Clean Water Act, two fundamental types of assistance were available to small communities for wastewater projects: grants and loans (either at market or below-market interest rates). Starting in fiscal year 1990, only one of the two fundamental types of federal assistance, loans, will be available for wastewater projects. The financial assistance option which had been most attractive to communities, grant financing, is now without federal backing. Without grant financing, a community must generally borrow from the state at the state's rate, or issue debt based on the state's or its own credit rating. As a result, the local share of project costs can be expected to increase with the discontinuation of federal grant financing.

Federal grant financing served another fundamental purpose besides reducing the local portion of project costs: it targeted communities based on water quality priority. Without grant financing, financially needy or hardship communities must apply for larger loans, issuing larger debt in order to fund the necessary wastewater facility. Because programs such as the SRF are to be self-sustaining, with loan repayments assuring program perpetuity, communities must demonstrate an ability to repay the principal and interest of a loan or bond within the given amortization period, typically 20 years. Other project obligations, such as bond insurance, may also be required by the lending institution to assure repayment. Good banking and financial management practices mandate the use of such controls when investing money. As a result, an issue has been raised regarding whether many communities, particularly small communities, might not have the resources, financially or otherwise, to assume long-term debt. Hence, small communities may be unable to raise the necessary capital for a needed wastewater treatment improvement project.

STUDY QUESTION

This study investigates whether communities with less than 3,300 people have the personnel and financial resources to program and pay for wastewater treatment facilities to meet secondary discharge standards.†

STUDY DESIGN

Seven small communities in Utah with known wastewater treatment needs, as documented in the 1988 EPA "Needs Survey," were sampled (EPA, 1988a). Phase 1 of this sampling involved personal interviews with key informants (mayors, council members, county planners/health administrators, and/or city engineers) to determine, among other things, possible innovative financial options to pay for the construction of needed wastewater facilities.†† Phase 2 involved the compilation of financial information for each community dating from fiscal year 1985 to present.††† Phase 3 involved following Utah Bureau of Water Pollution Control (BWPC) guidelines to determine community ability to pay.††††

---

† Secondary treatment discharge standards for municipalities are mandated in the Federal Water Pollution Control Act, with the following maximum concentrations regulations being required by the United States Environmental Protection Agency:

Maximum Monthly Average Concentrations

Biochemical Oxygen Demand	30 mg/L
Suspended Solids	30 mg/L
Fecal Coliform	200 count/100 mL
pH	6.0-9.0

†† For a detailed listing of interview questions see Appendix A.

††† See Appendix B for additional information on the financial data compiled for each community.

†††† For a selective listing of Utah BWPC guidelines see the *assessing community "ability to pay"* section in Appendix A.

Sampled communities, by county, include the following third class cities and towns:†

Carbon County:	* Hiawatha Town
Cache County:	* Hyde Park City
Summitt County:	* Kamas City
Daggett County:	* Manila Town
Carbon County:	* Scofield Town
Davis County:	* South Weber City
Weber County:	* Uintah Town

STUDY LIMITATIONS

The ability of this study to represent all U.S. towns and third class cities with wastewater treatment needs is limited by the following circumstances: (1) a limited number of communities were sampled, 7; (2) all communities are located in one state, Utah; and, (3) study communities were not statistically chosen. Rather, study communities were chosen in an attempt to vary the following community characteristics: level of wastewater treatment need; population growth during the past decade; and, per capita income levels (communities were chosen with levels both greater and less than the state's 1985 average of $8,535).

A third limitation is that the financial indicators used to estimate community ability to pay may not accurately reflect a particular community's willingness to pay for improved wastewater services. Also, some municipalities may have additional capital improvement projects which may result in financial constraints not predicted in the study.

The final limitation is that a community's fiscal condition will continually change with changes in the national and/or regional economy. Because fiscal balances for only 4 years (1985-1988) were analyzed for each community, it is possible the data from 1985-1988 may not be representative of the financial conditions that will exist during the proposed repayment period. Communities assessed as able to assume long-term debt may, because of unforeseen changes in the economy, be unable to fulfill debt obligations.

---

† The U.S. Department of Commerce, Bureau of the Census defines a Third Class City as having between 800 and 60,000 in population and a Town as having 800 or less.

CASE STUDIES

Hiawatha, Utah

Hiawatha is an unincorporated coal mining town located in the mountains of Carbon County, Utah. First settled in 1912, the town prospered while coal reserves abounded and coal was the primary energy source in the nation. During this period (1912-1954), six major coal mining shafts were active and provided jobs to over 600 Hiawatha residents. Since 1954, the number of active mines serving Hiawatha residents has declined. In 1988 only 2 Hiawatha mines were active and the town's population was one-fifteenth of 1954 population levels. Currently, there are 17 occupied homes and a total of 40 people who live year-round in Hiawatha. The U.S. Fuel Company is the sole employer in the town, owning and operating the 2 active shafts, the coal processor, and the Hiawatha store.

Characterizing the community's wastewater treatment needs.

Every two years, as required by Sections 205 (a) and 516 (b) (1) of the Clean Water Act, the State of Utah assesses the capital investment required to build or improve needed municipal wastewater treatment facilities. A need is identified as a municipality not currently meeting secondary discharge standards. In carrying out this analysis process, the Bureau of Water Pollution Control (BWPC) uses three techniques. The most advanced of these techniques uses an EPA approved cost-curve program, the Computer Aided Process Design Evaluation Technique (CAPDET). Input parameters to CAPDET are unit process variables (population figures, flow rates, and effluent limitations). The program is adjusted for inflation and estimates municipal wastewater costs to within 10 percent of actual construction and planning costs (Bishop, 1989). Two less accurate methods are: (1) adjusting the 1986 "Needs Survey" construction cost value for inflation and (2) using CAPDET with default inputs or a limited number of specified input parameters. With the above methods, municipal wastewater construction and planning costs are estimated within 20 and 15 percent, respectively, of actual costs.

Using a simplified version of CAPDET, the EPA estimated Hiawatha's current wastewater treatment need as $167,000 (EPA, 1988). Facilities construction would provide secondary wastewater treatment for area residents and U.S. Fuel Company employees. Project need was motivated by public health concerns and environmental concerns. The BWPC notes that sewage in the town is presently transferred in an open ditch and treatment facilities are not enclosed. This poses a

potential health threat to area residents and workers (Hess, 1989). Although Hiawatha's coal slurry/wastewater treatment pond is non-discharging, two pertinent environmental concerns persist. First, Hiawatha's raw sewage drains into a coal slurry pond, but, because of the incompatibility of the two treatments needed for coal slurry and raw sewage, adequate treatment is not provided. Second, the soils underlying the Hiawatha coal slurry/wastewater treatment pond are underlain by Mancos shale, a non-water-bearing formation (USDA, 1970). Because the sides and bottoms of the slurry pond were not sealed during pond construction, impoundment seepage from the pond may be reaching and contaminating nearby Miller Creek.

The Hiawatha facility is ranked number 17 on the 1989 Utah State Project Priority List. It was hoped that Hiawatha's wastewater treatment needs would receive funding in fiscal year 1988. Funding negotiations were stalled, however, because community leaders in Hiawatha do not think there is a problem[†] and, in part, because Hiawatha is not incorporated.

Describing the community's financial condition.

The operating budget of the Town of Hiawatha is below $50,000 per year. Hiawatha in many respects is little more than a ghost town. Of the 600 residential houses boasted to have occupied the community during the 1950s, less than 50 are left standing. The others have been leveled to the foundation or abandoned. Many of the 50 houses left standing are tenement houses. The town tennis court is all weeds, the chain link fence around the court rusted, and, for the most part, ripped down. The town appears impoverished, although a recent assessment using nine key financial indicators to rate Hiawatha's financial condition showed Hiawatha to rate either "strong" or "average" in eight of nine indicator categories (see Table 1).

---

† Southeastern Utah Association of Governments (SEUAOG) Water Quality Director, Leah Ann Lamb, commented that "many local officials [in Carbon County] do not understand wastewater treatment processes and are of the 'old boy' mentality: it has been done this way for years and that there is no reason to change now." (Lamb, 1989). Consequently, the Water Quality Director spends a great deal of time educating residents and local officials about the health consequences of improperly treated wastewater.

TABLE 1.

Assessment of Hiawatha's Current Financial Condition †

Indicator ††	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	-9%	**<-1%**	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	0%	< 0%	**0% to 5%**	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	**>98%**
4. Property Tax Revenues as % of Full Market Value (FMV)	0.4%	>4%	2% to 4%	**< 2%**
5. Tax-Supported Debt as % of FMV	0%	>5%	3% to 5%	**< 3%**
6. Tax-Supported Debt as % of Personal Income	0%	>12%	4% to 12%	**< 4%**
7. Current Direct Net Debt per Capita	$0	>$750	$250 to $750	**<$250**
8. Overall Net Debt per Capita	$0	>$1,000	$450 to $1,000	**<$450**
9. % Direct Net Debt Due Within 5 Years	NO DEBT	<10%	10% to 30%	**>30%**

† Refer to Appendix B (Table B.1) for additional information on the data sources and methodology used to determine Hiawatha's financial indicators. Note: indicators 1-9 reflect the community's current financial condition, not its financial condition were the proposed project debt assumed.

†† The financial capability indicators and rating system found herein are used with permission of the EPA Office of Water Program Operations (Washington, D.C.) and can be referenced in the March 1984 edition of the EPA Financial Capability Guidebook.

Hiawatha rated "strong" on indicators 2-9, and "weak" on indicator 1. Hiawatha's "strong" rating on indicators 4, 5, 7, and 8 implies that town financial independence is not being lost, but remains independent (EPA, 1984). Similarly, positive ratings for indicators 3 and 9 indicate effective community financial management practices.

EPA stresses, however, "the importance of evaluating the results of the indicators, whether positive or negative, in light of the community's particular circumstances." (EPA, 1984). In the case of Hiawatha, this is particularly noteworthy because of the uncertain future of the community's single industry, as represented by indicator 1.

The uncertain future of Hiawatha's single industry is primarily revealed in Hiawatha's annual rate of change in population (indicator 1). Indicator 1 shows an estimated annual decrease in Hiawatha population at a rate of 9%. This very "weak" rating, despite seven "strong" and one "average" indicator ratings, raises a warning signal about the overall economic vitality of the community.

The vitality of Hiawatha's economic base, like most municipalities, is dependent on personal income, retail sales, and the market value of real property (Rosenberg, 1978). This vitality is significantly affected by large increases or decreases in population. In Hiawatha, large population decreases have caused personal income levels to remain relatively constant, despite four years of increases in per capita income. Although data on retail sales were not collected in this study, a decline in Hiawatha general fund revenues (see Appendix B, Table B.1, indicator 2) -revenues which, in part, are collected from taxes on retail sales- identifies a general decrease in retail sales receipts. General fund expenditures in Hiawatha decreased from $58,115 in Fiscal Year (FY) 1986 to $51,079 in FY 1987, and to $41,311 in FY 1988. Similar declines were noted with respect to the sale value of assessed property in Carbon County. The 1988 dollar-weighted mean of real property in Carbon County was 106, meaning the actual sale price of real property in Carbon County was 6 percent below its assessed value (Utah State Tax Commission, 1988).

Evaluating community finance options.

As noted earlier, Hiawatha has an EPA estimated wastewater treatment need of $167,000. Hiawatha Engineer Bob Eccly's comment on this amount was that "Hiawatha does not have a wastewater treatment need, let alone a $167,000 wastewater treatment need. The current system," he continued, "is operational, non-discharging, and sufficiently able to handle the town's wastewater needs." (Eccly, 1989). Further discussion of community finance issues, i.e., ways of reducing costs and/or raising additional revenues were not successful.

Nonetheless, different revenue-raising mechanisms are available to finance Hiawatha's wastewater facility needs. Table 1, for example, shows that additional revenues from either property or income taxes could be raised in Hiawatha because of the town's primarily "strong" indicator ratings (see indicators 5-8 in Table 1). In addition, indicator 9 which measures a community's current debt capacity as a percent of direct net debt due within five years, reveals that Hiawatha is not over-committing, let alone committing, future revenue to debt repayment. Hiawatha's debt capacity is completely intact and, therefore, property and/or income taxes are available as a revenue source to: secure a loan, repay a "full faith and credit" general obligation bond, and/or build a capital improvement fund.

Three additional revenue-raising mechanisms are potentially available to secure the (loan) money necessary to finance Hiawatha's wastewater facility needs. One possibility is "pay-as-you-go" financing which uses a proportion of current general fund revenues to support a capital reserve account. However, as of fiscal year 1988, Hiawatha had not yet established a capital reserve account. The second revenue-raising possibility is grant financing from the State Community Impact Board (CIB). Again, this is not a reliable wastewater funding source. CIB grant funding is, as a whole, declining (Clark, 1989). The CIB project committee is preferentially issuing below-market rate interest loans over grants.

The third revenue-raising possibility is user fees. However, because Hiawatha is a company-owned town this option is not particularly viable. In fact, company control of residential property has created speculation by personnel in both the Utah State BWPC and the SEUAOG that U.S. Fuel Company workers living in Hiawatha would be moved to the nearby City of Price if enforceable action were taken by the state requiring new sewer hook-ups to individual residences (Hess, 1989; Lamb, 1989).

Assessing the community's "ability to pay."

The Utah BWPC has developed a simple financial capability assessment model to approximate the cost of sewer service to an average residential household or equivalent household unit (EHU). This model demonstrates the effect of interest rates on user fees. User fees between 0.75 and 1.5 percent of MHI signify a reasonable local share of financial burden. The BWPC, however, identifies the 0.75 percent as a target or most desired level. If a proposed loan interest rate results in a user cost greater than 1.5 percent of MHI, the Utah BWPC will not make a loan unless other demographic conditions are unusually favorable (Hess, 1987).

The Town of Hiawatha's wastewater treatment estimated project cost is $167,000. The town has approximately 16 households and 3 businesses to help distribute the project cost. Because business are typically issued user charges twice that of residences, each business is counted twice when determining an overall number of EHUs. Therefore, Hiawatha has approximately 22 EHUs over which the $167,000 project costs can be spread.

When preparing a community financial package, various funding scenarios can be assumed. Table 2 demonstrates three funding scenarios for Hiawatha Town, Utah. In each of the three scenarios, community MHI, the number of EHUs, the loan amount, and the amortization period for the loan are held constant. Also, each loan repayment schedule assumes equal payments per period, monthly or annually,

until loan maturity 20 years later. Scenarios 1-3, therefore, are identical in all respects, except one. In each scenario, different annual interest rates are assumed. Scenario 1 assumes an annual interest rate of 0.0 percent; scenario 2 an interest rate equal to 5.0 percent; and, scenario 3, a 10.0 percent interest rate.

TABLE 2.
Project Funding Scenario, Hiawatha Town, Utah.†

Community Name:	Hiawatha Town		
Community MHI, $:	24,952		
Project Cost, $:	167,000		
Number of EHUs:	22		
Hook-up Fee, $:	N/A		
Net Project Cost, $:	167,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	167,000	167,000	167,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly User Fee per EHU, $	31.63	50.10	73.25
Annual User Fee per EHU, $	379.55	601.16	879.05
User Fee as % of MHI	1.52	2.41	3.52

† Refer to Appendix C for additional information on the methodology used to determine monthly and annual EHU costs and percent MHI.

With interest rates ranging from 0 to 10 percent, the three scenarios yield significantly different monthly and annual EHU charges and percent MHI payments. A state loan at zero percent interest, for example, results in a percent MHI of 1.52 and a $31 monthly payment per EHU. When loan interest rates are increased to 5 and 10 percent, monthly EHU user fees are $50 and $73, respectively.

Even scenario 1, the most affordable to Hiawatha residents, may not be feasible. Two items are noteworthy. First, although a 1.52 percent MHI is in excess of the desired 0.75 percent mark, the magnitude of public funds committed

to the project remains low. Second, user fees might not prove a dependable, long-term (i.e., 20 years) revenue source, given adverse economic conditions with the town's primary employer. Consequently, a favorable loan determination for the net project costs of $167,000 is contingent upon increased public expenditure at the beginning of the project (i.e., year one) and improved economic conditions. Community "ability to pay" for the proposed project is, therefore, possible using the Utah state revolving fund. The state is assuming a risk, however, on the principal amount of the loan because of Hiawatha's questionable economic stability.

Identifying market constraints to issuing debt.

The primary constraint to Hiawatha's ability to finance debt is a general lack of community commitment to the project. Contributing factors to this lack of commitment include:

(1) the uncertain future of Hiawatha's primary industry, the U.S. Fuel Company;
(2) lack of education regarding project need;
(3) overriding philosophical/mental stance of the community population, commonly referred to as the "old boy, miner, or Cal Black mentality";
(4) possible problems with Hiawatha's not being an incorporated government; and,
(5) historically small use of public expenditures for community services.

Hyde Park, Utah

Hyde Park is a city of 1,900 people and is located in Utah's fifth most populated county, Cache County. Situated at the foothills of the timbered Bear River Range which overlooks the diversified agrarian Cache Valley, Hyde Park residents are employed in a variety of industries: forestry, farming, education, and business. In general, city growth (income and population) has been in a positive direction. The City of Hyde Park has an updated capital improvement program, has recently retired nearly $256,882 in bonded debt, and is creating a reserve fund for future capital improvement projects.

Characterizing the community's wastewater treatment needs.

Using the more complex version of CAPDET†, the EPA estimates Hyde Park's current wastewater treatment need to equal $2,016,000 (EPA, 1988a). Construction is needed to provide secondary treatment for the city's 502 households, 7 businesses, and future growth. A new interceptor, with lateral hook-ups to occupied structures, is proposed. Secondary treatment would be provided by the nearby City of Logan. Project need was motivated by three factors: (1) desired growth along the business corridor of Highway 91, which, at present, has a no development moratorium placed on it because of raw discharge rising to the surface along the east side of the highway; (2) possible public health concerns deriving from raw discharge rising to the surface along Highway 91; and, (3) a desire to protect the water quality of the Cache Valley Marsh (Hyde Park's sewage currently drains towards this area of protected wetlands).

Describing the community's financial condition.

A 1989 assessment of Hyde Park's financial condition notes that Hyde Park rates "strong" on eight of nine indicator categories and "weak" on indicator 2 (general fund surplus/deficit) (see Table 3). These "strong" and "weak" indicators combine to indicate that: (1) the economic vitality of Hyde Park is being maintained; (2) municipal financial independence is not being lost; and, (3) current municipal costs are not being deferred or postponed to the future.

---

† CAPDET, the computer-aided cost-curve program is explained in detail in the previous case study.

TABLE 3.
Assessment of Hyde Park's Current Financial Condition †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	3%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	-14%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	1.0%	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	2.4%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	0.4%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$39	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$39	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	36%	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.2) for additional information on the sources and methodology used to determine Hyde Park's financial condition.

Indicators 1 and 6 indicate that Hyde Park's economic vitality is being maintained. Indicator 1 determines the estimated annual rate of population change in Hyde Park, 3 percent, to be "strong." Similarly, indicator 6 reveals Hyde Park's ability to repay tax-supported debt, i.e., general obligation debt, to be less than 4 percent and, therefore, "strong."

Indicators 4, 5, 7, and 8 infer that Hyde Park City's financial independence is being maintained. Indicator 4 (property tax revenues as percent of FMV), for example, shows that the community is not taxing real property extensively. Thus, revealing that future revenue growth from this source has potential. Indicator 5 compares the amount of tax-supported debt owed by a community with the FMV of real property in the community. Hyde Park's "strong" rating indicates that the community is capable of supporting additional debt. Indicators 7 and 8 reveal the relative degree of general obligation debt owed by the community. Current direct net debt and overall net debt owed by Hyde Park residents is "strong."

Indicators 3 and 9 indicate that Hyde Park city's financial management practices are effective. Indicator 3 (real property tax collection rate) shows 100

percent efficiency in collecting levied property taxes in three of the past four years and, indicator 9 indicates an annual percentage payment on existing direct net debt of 35 percent. This percent rates as "strong" because direct net debt payments are well-within the useful life of the bonded facility.

The average general fund operating budget of Hyde Park in fiscal years 1985, 1986, and 1987 was approximately $200,000 (see Appendix B, Table B.2, indicator 2). In FY 1985 and FY 1986, Hyde Park's general fund had surpluses of $49,721 and $34,990, respectively. In FY 1987 the Hyde Park general operating fund suffered a 14 percent deficit; expenditures exceeded revenues by $35,482. Consequently, a "weak" indicator rating is attributed to Hyde Park for indicator 2. However, surplus of the previous year allowed the fiscal budget ending June 30, 1988 to be balanced, as required by law. Peterson & Allred, an independent Certified Public Accounting firm noted that "city officials [were] aware of this violation and [were] taking actions to correct the matter...." (Peterson &Allred, 1988). Additional comments regarding city financial practices are referenced in: Peterson & Allred, Certified Public Accountants, City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1988, Logan, Utah, September, 1988.

Proof that current municipal costs are not being deferred or postponed to the future are evident in that the city has an updated capital improvement program, has recently retired nearly $256,882 in water resources bonded debt, and is creating a reserve fund for future capital improvement projects.

Evaluating community finance options.

As noted above, Hyde Park's EPA estimated wastewater treatment need is $2,016,000. Mayor Ball's comment on this amount was that "a collection line connecting Hyde Park to Smithfield could be put in at a fraction of the price as that quoted by the 3 consulting engineers, if the collector was built neighborhood-by-neighborhood and debt financing was kept to a minimum." (Balls, 1989).

Capital improvement projects are typically financed in Hyde Park through the issuance of general obligation bonds. The last example of this was in the mid-1980s when the community issued $664,227 in general obligation debt for the construction of water supply facilities. Councilwoman Grunig stated that "the proposed wastewater treatment facilities would, in part, involve the issuance of a bond to be voted on by the entire Hyde Park population." (Grunig, 1989). To clear the way for a general election on the proposed future sewer bond, the city refinanced $551,882 in general obligation bonds in 1988. In 1987, Hyde Park had $625,882 in general obligation bonds. In 1988, its Farmers Home Administration

(FmHA) Water Bond was refinanced with $295,000 being issued in revenue bonds and $74,000 being refinanced as a general obligation bond. A total of $256,882 was retired in this same year.

Mayor Balls indicated that there would be a series of individual equity issues to solve before a referendum on a general obligation debt could be passed (Balls, 1989). Councilwoman Grunig felt, however, that the benefits of economic growth along Highway 91 would override individual, isolated equity issues (Grunig, 1989).

Councilwoman Grunig believes that the Utah state revolving loan program could be secured for the project if Hyde Park residents would vote to approve a general obligation bond issued to the state. "In the past," Councilwoman Grunig commented, "Hyde Park has been able to assume long-term debt using state sources. I would foresee the state [BWPC] being able to help us with this project as well." (Grunig, 1989).

Assessing the community's "ability to pay."

The overall economic vitality of Hyde Park, based on three years of financial indicator data, appears unusually strong for a small Utah community. As mentioned above, the city retired nearly $256,882 in bonded debt in 1987 and is active in planning for its capital improvement needs. With 502 residential households and 7 businesses, the City of Hyde Park has 516 equivalent household units (EHUs) to support wastewater construction costs. Table 4 approximates the cost of sewer and treatment services per EHU for different loan interest rates.

Scenarios 1-3 each reflect a large financial commitment by Hyde Park City residents in the form of a one-time $1,000 connection fee. For all interest rates, estimated user fees are in excess or just below the targeted 0.75 percent of the median household income (MHI). Scenario 1, for instance, demonstrates that a state loan for $1,500,000, with 20 year amortization period, and a zero percent interest rate results in equal monthly payment per EHU of $12, 0.66 percent MHI. This compares to $19 and $28 per month per EHU when interest rates are increased to 5 and 10 percent, respectively.

TABLE 4.
Project Funding Scenario, Hyde Park City, Utah.

Community Name:	Hyde Park City		
Community MHI, $:	22,041		
Project Cost, $:	2,016,000		
Number of EHUs:	516		
Hook-up Fee, $:	1,000		
Net Project Cost, $:	1,500,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	1,500,000	1,500,000	1,500,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly User Fee per EHU, $	12.11	19.18	28.05
Annual User Fee per EHU, $	145.35	230.22	336.64
User Fee as % of MHI	0.66	1.04	1.53

Strong economic and demographic conditions in Hyde Park reveal, however, an ability on behalf of the community to finance more of the wastewater project than indicated in scenario 1. Grant money will not be required to finance Hyde Park's $2.016 million in wastewater project need. Hence, Hyde Park should be able to secure a below-market interest rate loan for the project from the state revolving fund or other wastewater project loan sources, such as FmHA.

Identifying market constraints to issuing debt.

Existing constraints on Hyde Park's ability to finance debt include (Grunig, 1989):

1) limited access to bond market; consequently, the need to work with the BWPC and seek eligibility for state money;
2) potential questions about the community's willingness to incur $2 million in wastewater debt; and,
3) lack of sales and business tax revenues.

Kamas, Utah

In the arid and mountainous Summit County, approximately 130 miles east of Salt Lake City, the incorporated City of Kamas is located. Incorporated on July 5, 1911, Kamas City development has always been moderate and greatly influenced by lumber and agricultural commodity prices. The city's estimated 1989 population is 1275 people.

Characterizing the community's wastewater treatment needs.

Kamas has a current wastewater treatment need of $1,673,000, as estimated by the more complex version of CAPDET. Treatment and potentially new interceptors are needed. The system is to serve existing residents and businesses, as well as future developments installing a new sewage collection system. Project need was motivated primarily by environmental concerns, as well as needs for future growth.

During early spring, recharged groundwater levels rise in the area near Kamas. This groundwater infiltrates into the old and deteriorated city concrete pipes, causing the town's wastewater lagoons to fill to capacity. "Spill over actually occurred in the months of April and May during 1986, 1987, 1988, and 1989," commented Kamas Wastewater Superintendent Terry Atkinson (Atkinson, 1989). Terry Atkinson continued, "only the floaters and the sinkers had already been removed when the water spilled over. The semi-treated sewage then drained into Beaver Creek which flows into the Upper Weber River above Rockport Lake. The proposed facility which plans for 6 small new lagoons is designed to keep such occurrences from happening again." (Atkinson, 1989).

Describing the community's financial condition.

A 1989 assessment of Kamas' financial condition notes that Kamas rates "strong" on each of nine indicator categories (see Table 5). These indicators combine to illustrate that: (1) the economic vitality of Kamas is improving; (2) municipal financial independence is not being lost; (3) financial management practices of the municipality are effective; and, (4) current municipal costs are not being deferred or postponed to the future.

TABLE 5.
Assessment of Kamas' Current Financial Condition. †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	2%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	8%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	0.4%	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	0%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	0%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$0	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$0	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	No Debt	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.3) for additional information on the sources and methodology used to determine Kamas' financial condition.

Indicators 1, 2, and 6 indicate that the economic vitality of Kamas is being maintained. Indicator 1 shows the estimated annual rate of change in population in Kamas to be "strong". Indicator 2 reveals that in FY 1988, the Kamas City general fund operated a 8 percent surplus. Revenues exceeded expenses by $14,031. For indicator 2, an overall $62,847 operating surplus for the City of Kamas in FY 1986 and FY 1987 was determined. Indicator 6 strengthens the view that the economic vitality of Kamas is being maintained. It reveals a "strong" ability on the part of Kamas City to repay tax-supported debt.

Indicators 4, 5, 7, and 8 infer that Kamas City financial independence is being maintained. Indicator 4 shows that the community is not taxing real property extensively and that future revenues from this source are potential. Indicator 5 compares the amount of tax-supported debt owed by a community to the FMV of real property in the community. Kamas' "strong" rating indicates that the community is capable of supporting additional debt/borrowing. Indicators 7 and 8 reveal the relative degree of general obligation debt owed by the community. Current direct net debt and overall net debt owed by Kamas residents is $0. Based on national averages, a $0 per capital general obligation debt rates as "strong."

Indicators 2, 3, and 9 indicate an overall effectiveness in Kamas City financial management practices. As noted above, the Kamas City general fund has efficiently raised revenues for its general fund, operating a net operating surplus of an 8 percent surplus in FY 1988. Indicator 3 (real property tax collection rate) shows 100 percent efficiency in collecting levied property taxes, while indicator 9 shows that the community has zero direct net debt outstanding. City disuse of short-term borrowing practices is another example of the overall effectiveness of Kamas City management practices. Additional comments regarding the strengths of current city financial practices are referenced in: Crane, Davis & Johnson, Certified Public Accountants, City of Kamas Comprehensive Annual Financial Report for the Year Ended June 30, 1988, Salt Lake City, Utah, November, 1988.

In Kamas City during FY 1986, FY 1987, and FY 1988, capital items such as highways and streets, parks and city hall, and public safety were regularly appropriated. Use by city officials of an unofficial, but regularly implemented capital improvement program reveals that current municipal costs are not being deferred to future Kamas City residents.

Evaluating community finance options.

As stated above, Kamas has an EPA estimated wastewater treatment need of $1,673,000. Asked how this figure could be reduced, Mayor Blazzard commented that "by all consultation, the lagoon alternative seemed the most cost-effective for the city. We looked at other alternatives," he continued, "but the lagoons were the simplest and least energy intensive alternative applicable to Kamas. Also, the city has personnel in place who are trained to manage these facilities. Lagoons are Kamas' best alternative." (Blazzard, 1989).

The previous two bonds issued in Kamas were in 1969 and 1964 for sewer and water utility projects, respectively. In 1969, the FmHA issued $160,000 in sewer revenue bonds to the City of Kamas. In 1964, the state issued $145,000 in water revenue bonds to Kamas. To date, Kamas has $200,010 outstanding in revenue bonds for sewer and water.

Kamas City has a water revenue bond ordinance and sewer revenue bond ordinance requiring "sufficient revenues be set aside to pay principal and interest on these bonds as they become due." Enterprise funds have been effectively used by Kamas officials to assure compliance with both ordinances (Crane, 1987).

It is anticipated that the proposed wastewater treatment facilities would be financed through user charges. "Issuance of a revenue bond," commented Mayor Blazzard, "seems the most feasible way for the city to raise the necessary revenues for the project. Revenue bonds have served the city well in the past. I don't think

the residents will like the increase in user charges, but we cannot have our waste going uncleaned into Beaver Creek. If the city receives good terms from the state or maybe FmHA (again), user charges should not be too excessive for our residents and merchants." (Blazzard, 1989). A general obligation bond will most likely be issued to the state to secure project loan money.

Mayor Blazzard noted that Kamas has used impact fees in the past to help provide city infrastructure. Regarding the two newly proposed developments, Mayor Blazzard said, "impact fees will be assessed to the developer, and new users will have to pay monthly user fees." (Blazzard, 1989).

Assessing the community's "ability to pay."

The economic vitality of Kamas is not plagued by past nor current difficulties in meeting debt obligations. The city has $0.00 in current general obligation debt and revenue bond repayments have occurred regularly since assuming project debt for sewer and water utilities in 1969 and 1964, respectively. Assuming a $1.6 million project cost, funding scenarios for the city's wastewater project are presented in Table 6.

TABLE 6.
Project Funding Scenario, Kamas City, Utah.

Community Name:	Kamas City		
Community MHI, $:	22,041		
Project Cost, $:	1,673,000		
Number of EHUs:	573		
Hook-up Fee, $:	N/A		
Net Project Cost, $:	1,673,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	1,673,000	1,673,000	1,673,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly Payment per EHU, $	12.17	19.27	28.18
Annual Payment per EHU, $	145.99	231.23	338.11
Payment as % of MHI	0.66	1.05	1.53

Table 6 approximates the cost of treatment services in the City of Kamas per EHU. It indicates that the equivalent household unit will pay approximately $28 per month or 1.53 percent MHI, if a market-rate loan at ten percent interest and a 20 year amortization rate for a $1.6 million loan is awarded. This compares to $19 and $12 per month EHU payments, as in scenarios 2 and 1, when interest rates are decreased to 5 and 0 percent, respectively. These two lower MHI percentages represent two reasonable funding scenarios for the community. Scenario 3, which well-exceeds the desired 0.75 percent mark is still within the community's "ability to pay," given the 9 "strong" financial indicators demonstrated in Table 5. Consequently, Kamas City should not have difficulty in financing its wastewater treatment improvements using state loan sources.

Identifying market constraints to issuing debt.

The assessed value of real property in Kamas has steadily increased over the last decade. Consequently, property tax revenues in Kamas have increased without an actual increase in property taxes. City ability to finance debt is not hindered by excessive bond obligations. The city currently has $200,000 in outstanding

revenue bonds due and zero dollars in general obligation debt. Enterprise funds are effectively being used by Kamas officials to meet annual revenue bond payments and, in general, all indications as to the financial condition of Kamas are favorable. Market constraints on Kamas' $1,673,000 wastewater treatment project needs, therefore, are quite basic:

(1) limited access to bond market; Kamas does not have a bond rating;
(2) possible confusion with application process;
(3) community preference not to have additional user fees; and,
(4) lack of large population base upon which to distribute project costs.

Manila, Utah

Manila is the smallest county seat in the state of Utah. With a current year-round population of 270, Manila is, in many respects, a small rural Utah town. However, the establishment of the Flaming Gorge National Reservoir in the 1950s, has helped Manila become the most populated portion of Daggett County during summer holidays and weekends. Nearly 25,000 vacationers visit Manila over the Fourth of July weekend. Consequently, many residents of Manila are employed with the town's flourishing tourist trade in addition to working for the National Forest Service or the the Daggett County government. Per capita income levels in the town are above average for the State of Utah. Difficulties do, however, persist regarding the town's ability to finance $1,300,000 in wastewater treatment needs.

Characterizing the community's wastewater treatment needs.

Having recently received bids for construction of its wastewater facilities, Mayor Scott estimates that Manila has a current wastewater treatment need of $1,300,000 (Scott, 1989). The facility is currently number 9 on the Utah State Project Priority List. Construction is needed to assure system compliance with secondary treatment standards.

Project need was motivated by environmental concerns. Manila's high summer population, especially during major national holidays, nearly exceeds the capacity of the town's 7-cell lagoon system. Additionally, engineering comments are that the location of Manila's present lagoons are inappropriate due to existing soil conditions (Scott, 1989). During high water seasons, the stability of the Manila lagoons are threatened. Birch Creek and Flaming Gorge Reservoir could be

negatively affected by organic loading if destabilization of the Manila lagoons occurred. Engineering recommendations are for a new 3-celled lagoon system to be built at a new location, with the existing lagoons being abandoned once construction is complete.

Describing the community's financial condition.

As part of this study, an assessment of Manila's financial condition was conducted. Using the financial capability indicators and rating system developed by the EPA (see Table 7), financial data was compiled and the following was noted: (1) the economic vitality of Manila is strong; (2) municipal financial independence is not being lost; (3) financial management practices of the municipality are effective; and, (4) current municipal costs are not being deferred or postponed to the future.

TABLE 7.
Assessment of Manila's Current Financial Condition. †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	-0.1%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	30%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	0.1%	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	0%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	0%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$0	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$0	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	No Debt	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.4) for additional information on the sources and methodology used to determine Manila's financial condition.

Manila rates "strong" on indicators 2-9, and "average" on indicator 1. Indicators 1 and 6 indicate that Manila's economic vitality is being maintained. Indicator 1 only slightly supports this statement by showing that the estimate annual rate of change in population in Manila, -0.1 percent, to be only "average."

Indicator 6, on the other hand, is an important factor in indicating the strength of Manila's economic base. Indicator 6 is calculated by dividing tax-supported general obligation debt by personal income to determine community tax-supported debt as a percent of personal income. Manila rates "strong" on this indicator, revealing that the town has per capita income levels above state averages (refer to Appendix B, Table B.4, indicator 6) and that the town does not have a growing general obligation debt burden.

Indicators 2, 3, and 9 indicate that Manila's financial management practices are effective. Indicator 2, for example, reveals that in FY 1988, Manila's general fund operated a 30 percent surplus, where revenues exceed expenses by $21,082. Previous years analysis for the town of Manila reveals a net general fund operating surplus of $24,321 for FY 1986 and $197 for FY 1987. Indicator 3 shows 100 percent efficiency in collecting levied property taxes and, indicator 9 shows Manila to have no outstanding direct net debt.

Similarly "strong" rating on indicators 4, 5, 7, and 8 demonstrate that Manila's financial independence is not being lost. The four indicators show a conservative use of property taxes, zero percent use of property taxes to support community long-term debt, $0 in current direct net debt per capita, and $0 in the community's overall direct net debt due per capita, respectively.

Evaluating community finance options.

Innovative and alternative wastewater treatment processes were evaluated by Manila Town as potential means to reduce project costs. Natural wetlands were considered as a viable treatment alternative. A series of economic and regulatory constraints, however, prevented this alternative from being chosen. A non-discharging treatment plant was eventually chosen. Merits of this choice are (Scott, 1989):

(1) treated wastewater is not discharged to Birch Creek or Flaming Gorge Reservoir;
(2) non-discharge is viable because evaporation exceeds precipitation in Manila;
(3) spray irrigation and/or land application is not a problem because agricultural land is available; and,
(4) wastewater treatment project costs were reduced from an estimated $1.7 million (EPA, 1988a) to $1.3 million.

In the past, Manila has financed capital improvement projects using revenue bonds secured with user fees. The Manila Water Resources Bonding Reserve

Enterprise Fund annually collects $36,000 in user fees and in 1987 had $285,544 in principal outstanding on its Water Resource Bond. Full debt repayment of Manila's Water Resource Bond is expected in the year 2010.

Mayor Carole Scott anticipates that the proposed wastewater project facilities would be financed, in part, through revenue bonds. "An informed town council," Mayor Scott commented, "elected leadership to implement necessary capital projects as long as the projects were done with revenue fees. Manila lacks reserve funds and, a community unwillingness to incur debt requires that necessary capital projects be financed, as in this case, without the vote of the people." (Scott, 1989).

The three local revenue sources most likely to be used in Manila for debt repayment are (foremost) user charges, followed by new connection fees and, potentially, annexation fees. An enterprise fund will be established to pay the principal and interest due on the revenue bond. Mayor Scott believes either the state or FmHA would issue the necessary wastewater treatment bond (Scott, 1989).

Assessing the community's "ability to pay."

It has been noted that Manila's economic vitality is strong: the town's financial independence is not being lost; Manila effectively manages its financial resources; and, current municipal costs are not being deferred. Yet, it is important to realize that Manila has only 270 year-round residents and that $1.3 million in wastewater project needs is not easily afforded by so few people. Table 8 explains this fact further.

TABLE 8.
Project Funding Scenario, Manila Town, Utah.

Community Name:	Manila Town		
Community MHI, $:	28,244		
Project Cost, $:	1,300,000		
Number of EHUs:	94		
Hook-up Fee, $:	N/A		
Net Project Cost, $:	1,300,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	1,300,000	1,300,000	1,300,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly Payment per EHU, $	57.62	91.27	133.46
Annual Payment per EHU, $	691.49	1095.25	1601.53
Payment as % of MHI	2.45	3.88	5.67

The Town of Manila has 64 full-time households and 15 businesses to be served by the proposed wastewater facility, corresponding to an EHU of 94. Referring to Table 8, it is noted that a state loan at zero percent interest and a 20 year amortization rate results in a user fee of 2.45 percent MHI per EHU. Similarly high MHI percentages for the other two funding scenarios reveal that Manila's strong demographic conditions (refer to Table 7) are not sufficient for the BWPC to lend $1.3 million to Manila, even with a zero percent interest rate. Grant financing, therefore, is required to meet the proposed project funding needs. A more detailed analysis would be required to determine the exact loan amount which Manila residents can afford. An amount equal to approximately one-third or $450,000 at zero percent interest and a 20 year amortization rate is one possibility. This scenario results in a MHI of 0.80 percent and monthly payments per EHU equalling $18.94.

Identifying market constraints to issuing debt.

Neither public-private owner/operator arrangements nor privately issued bonds were considered viable for the project (Scott, 1989). The Town of Manila does not

have the fiscal strength, let alone a bond rating to attract private investors for major capital improvement projects. Consequently, the primary constraints on Manila's ability to finance debt include:

(1) limited access to bond market;
(2) lack of large population base to distribute project costs;
(3) variable demand for services;
(4) economic dependence on tourism; and,
(5) community preference not to have additional user fees.

Scofield, Utah

Scofield is a sparsely populated (150 people) coal mining town located near the upper end of Pleasant Valley in Carbon County, Utah. At an elevation of 7,702 feet, the town is surrounded by towering hills on all sides but the north. To the north of Scofield, 43,000 acre-feet of water are impounded. This large freshwater impoundment, Scofield Reservoir, helps support economic activity in the arid State of Utah. In the 1970s, with passage of the Clean Water Act and noticeable declines in Scofield Reservoir water quality, an Area Wide Water Quality Plan for Scofield Reservoir was quick to develop (Lamb, 1989). The Utah BWPC and Carbon County Health officials targeted the Town of Scofield and six other Pleasant Valley communities as needing wastewater treatment improvements for the water quality of Scofield Reservoir to be protected. Construction of the Pleasant Valley and Scofield wastewater facilities is underway and scheduled for completion by 1990.

Characterizing the community's wastewater treatment needs.

The BWPC notes in the 1989 Utah Wastewater Treatment Project Priority List that new interceptors and treatment facilities are needed in Scofield Town. (BWPC, 1989). It was estimated in 1986 that it would cost $1,173,000 to build these structures (BWPC, 1986). Adjusted for inflation, Scofield Town's current wastewater treatment needs conservatively equals $1.2 million. The community is presently served by individual septic systems and is planning to build a subsurface drainfield (absorption trenches) with a collection system. The Scofield project is ranked number 7 on the 1989 State of Utah Wastewater Project Priority List. "Construction is needed," commented the SEUAOG Water Quality Director, "to protect public health and to attain a high measurable improvement in water quality [in Pleasant Valley Creek and Scofield Reservoir]" (Lamb, 1989).

Describing the community's financial condition.

Scofield is an abandoned coal mining town that has maintained a small, year-round population. Many retirees live in the town and, as a result (likely not directly) large capital expenditures for schools and parks have not been required. Through an assessment of Scofield's financial condition, it is noted that Scofield has not accumulated long-term debt and that the operating budget of the town is well-below $25,000 per year. Additional observations of this assessment are that: (1) the Town of Scofield has managed its small financial resources effectively in the past (refer to indicators 2, 3, and 9 in Table 9 as well as Appendix B, Table B.5) and, (2) the population and economic base of the community are growing, though moderately.

TABLE 9.

Assessment of Scofield's Current Financial Condition. †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	5%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	10%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	0.2 %	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	0%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	0%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$0	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$0	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	No Debt	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.5) for additional information on the sources and methodology used to determine Scofield's financial condition.

Evaluating community finance options.

The water quality problem affecting Scofield Reservoir transcends the Town of Scofield's general-purpose governmental boundary. Accordingly, in dealing with the water quality problem of Scofield and the Scofield Reservoir, local officials established the Scofield Reservoir Special Service District (SRSD), a single-purpose government to provide sewage treatment for five lakeshore communities in

the unincorporated area north of Scofield Town. With the power to levy taxes, user charges, and other fees, the SRSD offers Pleasant Valley communities a way to cooperate in dealing with the Scofield Reservoir issue. As such, the SRSD has aimed to ensure that the Scofield facility, as well as the other facilities in the district, are constructed and operated on an optimal scale.

Establishment of the SRSD has helped the Town of Scofield to save an estimated $104,000 in project costs (BWPC, 1986). For example, establishment of the SRSD allowed for an agreement, whereby, an isolated coal mine owned by Utah Fuel Company dispose of its domestic waste at Scofield Town's new treatment facility. User fees are distributed between Utah Fuel Company and Scofield Town residents, resulting in a lower monthly user charge for Scofield Town residents than would have existed without the $20,000 per year Utah Fuel contribution. Cost savings were realized in two additional ways. First, by pooling project costs for each of the seven Pleasant Valley communities, a lower interest borrowing rate was negotiated. Second, this pooling decreased each community's proportionate share of financial, legal, and, engineering fees.

Assessing the community's "ability to pay."

Scofield Town's ability to pay for its entire wastewater treatment project need of $1.1 million solely through user charges or property tax increases is not feasible. Although economies of scale have helped to reduce project costs, new treatment and sewer structures for Scofield remain expensive. Scofield Town was able to afford the needed facilities, however, due to grant funding for roughly 91.5 percent of project costs awarded by the BWPC and the EPA. The remaining project costs, 8.5 percent or $137,600, were financed using a Community Impact Board (CIB) loan at a 2.5% interest rate and a 25 year amortization period. The following circumstances made grant funding possible: a project need of $1.1 million; the relationship of the proposed project to the Scofield Reservoir Area Wide Water Plan; and, the fact that project negotiation began prior to 1987 Water Quality Act amendments to Title II. With a median household income of $19,792, the proposed wastewater service costs to Scofield residences will equal 0.78 percent of MHI (BWPC, 1986).† It is likely that town residents could have absorbed a larger portion of project costs. Nonetheless, it must be noted that grant financing assumed a critical role in financing Scofield's wastewater funding needs.

---

† Because the BWPC conducted a 1986 assessment of Scofield's ability to pay, Table 10 or a "best scenario" analysis for Scofield's $1.1 million wastewater treatment need is not included.

Identifying market constraints to issuing debt.

With a combined general fund operating budget below $25,000, Scofield's ability to issue debt is limited. Additiona factors which negatively affect Scofield's ability to issue debt is a limited credit history, information constraints, personnel constraints, and a lack of economic growth.

South Weber, Utah

South Weber (elevation 4,497, population 2208) lies in a cove at the mouth of Weber Canyon. Its neat, rectangular farms of gold and green infer that South Weber is a rural, agricultural community. South Weber, however, is located just east of the Great Salt Lake Valley, only 30 miles north of Salt Lake City and 10 miles south of Ogden (Utah's third largest city). Consequently, the community in South Weber has evolved to be more of commuter, suburban population than an active farming community. Per capita income levels in South Weber are approximately equal to state averages.

Characterizing the community's wastewater treatment needs.

The present method of wastewater disposal in South Weber is by individual septic tank and drain field systems. There have been problems experienced in the past with effluent from some of the septic tank drain fields surfacing into irrigation ditches. Many other drain fields are installed in gravel areas which pose a threat to aquifers supplying municipal wells. The Davis County Health Department has expressed concern about the impact of increasing numbers of these systems on existing wells (BWPC, 1984).

Despite local health official concerns, the citizens of South Weber voted down a wastewater treatment general bond in 1984 by a ratio of 2:1. Mayor Rex Bouchard's comment on the failed bond election was that "we [the city and the BWPC] thought the $24.00/month proposed user charge was fair and that city residents were in support of the project. If it would have been a narrow defeat, we were willing to bring in public relations people to better sell the bond election. As it turned out, the city had a Catch-22: need a sewer system for well-planned growth, but need a population to support putting in a sewer system." (Bouchard, 1989).

South Weber has a current wastewater treatment need of $2,226,000. This cost estimate represents $1,525,000 in collection sewers; $290,000 in intercepter sewers; $246,000 in lateral sewers; and $165,000 in engineering and legal fees (BWPC, 1984).

Describing the community's financial condition.

An assessment of South Weber's financial condition (refer to Table 11) notes that South Weber rates "strong" on eight of nine indicator categories and "average" in indicator 9. These indicators combine to illustrate that: (1) the economic vitality of South Weber is positive; (2) municipal financial independence is being maintained; and, (3) the financial management practices of the city are effective. However, a 2:1 defeat of a general bond referendum for a sewer system in 1984 might be an indication that needed capital improvement projects are being deferred to the future.

TABLE 11.
Assessment of South Weber's Current Financial Condition. †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	5%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	30%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	100%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	0.1%	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	0.4%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	2%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$174	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$174	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	29%	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.6) for additional information on the sources and methodology used to determine South Weber's financial condition.

Indicators 1, 2, and 6 indicate that the economic vitality of South Weber is being maintained. Indicator 1 shows the estimated annual rate of change in population in South Weber, 5 percent, to be very "strong." Indicator 2 reveals the South Weber City general fund operated a $66,219 surplus in FY 1988; a $64,471

surplus in FY 1987; a $66,245 surplus in FY 1986; and, a $66,245 surplus in FY 1985. Indicator 6 strengthens the view that the economic vitality of South Weber is being maintained. It reveals that South Weber's ability to repay tax-supported debt to be equal to 2 percent and, therefore, "strong."

Indicators 4, 5, 7, and 8 infer that South Weber City financial independence is being maintained. Indicator 5 compares the amount of tax-supported debt owed by a community with the FMV of real property in the community. South Weber's "strong" rating indicates that the community is capable of supporting additional borrowing. Indicators 7 and 8 reveal the relative degree of general obligation debt owed by the community. Current direct net debt and overall net debt owed by South Weber residents is $174. Based on national averages, a $174 per capital general obligation debt rates as "strong."

Indicators 2 and 3 indicate an overall effectiveness in South Weber City financial management practices. As noted earlier, the South Weber City general fund has very efficiently raised revenues for its general fund over the past 4 fiscal years (nearly $240,000 in surplus reserves). Indicator 3 reveals a similar degree of efficiency, as the real property tax collection rate in South Weber equalled 100 percent in FY 1988. City disuse of short-term borrowing practices is another example of the overall effectiveness of city management practices.

Evaluating community finance options.

In the past, South Weber has financed capital improvement projects using reserve funds, revenue bonds, general obligation bonds, lease-purchase agreements, and local loan sources. Regarding large capital improvement projects involving long-term debt negotiations, Mayor Bouchard commented that "the community had, to date, only issued revenue and general obligation bonds" (Bouchard, 1989). He noted, "lease-purchase agreements were of interest for the city's proposed wastewater facilities, but such agreements appeared less attractive with the tax laws, were not commonly practiced [as far as he knew], and, were not particularly suited for South Weber because South Weber would not be treating its own waste, but running an out fall line to Central Weber" (Bouchard, 1989).

As stated above, South Weber has an EPA estimated wastewater treatment need of $2,226,000. Asked how this figure could be reduced, Mayor Bouchard commented that the interceptor to Central Weber sewer facilities, by all consultation, seemed the most cost-effective alternative for the city.

The 3 other alternatives evaluated for the project were: (1) treatment and discharge (lagoons); (2) treatment and discharge (trickling filter plant); and, (3) land application (irrigation).

Competitive bids were not solicited for engineering services. Utah BWPC personnel reviewed the proposed engineering reports, however. It can reasonably be assumed the proposed engineering option for the interceptor to Central Weber sewer facilities and the associated costs were accurate.

Assessing the community's "ability to pay."

In 1984, South Weber citizens voted down a general obligation bond which was to be issued to the BWPC in order to secure a $1.7 million wastewater loan. BWPC evaluation of graduated repayments for the project showed that "user charges would be $24 per month, increasing at a rate of 5 percent per year, for the 20 year term and $20 per month for the entire 25 year term." (BWPC, 1984). It was shown that the increase in payments could have been covered for the 20 year term by an annual population growth rate of 3.8 percent per year or an additional 18 connections. Similarly, the 25 year term, could have been covered by a 3.4 percent per year growth rate or an additional 17 connections. South Weber's projected population growth, at the time of the study, was 5.3 percent per year. Actual growth rates in South Weber between 1980 and 1989 were 4.47 percent (refer to Table 11). Commenting on the 1984 loan package, Utah BWPC fiscal specialist, Nancy Hess remarked that she foresaw better financing for South Weber in the future (Hess, 1989). An option that would reduce user fee costs as percent of median household income from 1.33, as in 1984, to 0.69 percent would require a zero percent interest rate loan and a 20 year date of maturity on the loan (see Table 12). It would also require that a one-time $1,000 hook-up fee be assessed to 526 EHUs. It appears a financial package between 1.33 and 0.69 percent of median household income would be affordable to South Weber residents.

TABLE 12.
Project Funding Scenario, South Weber City, Utah.

Community Name:	South Weber City		
Community MHI, $:	23,340		
Project Cost, $:	2,226,000		
Number of EHUs:	526		
Hook-up Fee, $:	1,000		
Net Project Cost, $:	1,700,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	1,700,000	1,700,000	1,700,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly Payment per EHU, $	13.47	21.33	31.19
Annual Payment per EHU, $	161.60	255.95	374.271
Payment as % of MHI	0.69	1.10	1.60

Identifying market constraints to issuing debt.

Constraints on South Weber's ability to finance debt are comparable to those outlined earlier for the City of Kamas, Utah. These include:

(1) limited access to bond market; the city does not have a bond rating;
(2) possible confusion with application process;
(3) community preference not to have additional user fees; and,
(4) lack of large population base among which to distribute project costs.

Uintah, Utah

The Town of Uintah is located on the north-side of the Weber River, approximately two miles from the City Center of South Weber. Having a population of 510, Uintah has not witnessed the population growth of South Weber. Developable land in Uintah is limited, primarily because soil conditions on the remaining undeveloped land are not suitable for construction. Approximately one-quarter of the land in Uintah is seasonally saturated with water. Five acre minimum lot sizes are required for residential development in these areas. More intensive development can result only with construction of a sewer collection system in the town.

Characterizing the community's wastewater treatment needs.

Uintah is presently served by individual septic systems and is planning to build a collection system. Wastewater will flow to Central Weber for treatment. Using inflation-adjusted 1986 "Needs Survey" cost-estimates for Uintah, estimated project costs are $2,387,000 to construct collection, interceptor, and lateral sewers for Uintah's 170 households and 8 businesses (EPA, 1988a).

Describing the community's financial condition.

An assessment of Uintah's financial condition notes that Uintah rates "strong" on eight of nine indicator categories and "weak" on indicator 2 (general fund surplus/deficit) (see Table 13). These "strong" indicators combine to indicate that: (1) the economic vitality of Uintah is being maintained and, (2) municipal financial independence is not being lost.

Indicators 1 and 6 indicate that Uintah's economic vitality is being maintained. Indicator 1 features an estimated 5 percent annual rate of change in population Similarly, Uintah's indicator 6 rates "strong," reflecting an ability to repay tax-supported debt general obligation debt equal to 0.6 percent.

Indicators 4, 5, 7, and 8 infer that Uintah's financial independence is being maintained. Indicator 4, for example, shows that the community is not taxing real property extensively; thus, revealing that future revenue growth from this source is potential. Indicator 5 compares the amount of tax-supported debt owed by a community with the FMV of real property in the community. Uintah's "strong" rating indicates that the community is capable of supporting additional debt from

TABLE 13.
Assessment of Uintah's Current Financial Condition. †

Indicator	Actual Indicator Value	Indicator Rating Weak	Average	Strong
1. Annual rate of change in population	5%	<-1%	-1% to 1%	> 1%
2. General Fund Surplus/Deficit	-17%	< 0%	0% to 5%	> 5%
3. Real Property Tax Collection Rate	109%	<96%	96% to 98%	>98%
4. Property Tax Revenues as % of Full Market Value (FMV)	0.2 %	>4%	2% to 4%	< 2%
5. Tax-Supported Debt as % of FMV	0.3%	>5%	3% to 5%	< 3%
6. Tax-Supported Debt as % of Personal Income	0.6%	>12%	4% to 12%	< 4%
7. Current Direct Net Debt per Capita	$62	>$750	$250 to $750	<$250
8. Overall Net Debt per Capita	$62	>$1,000	$450 to $1,000	<$450
9. % Direct Net Debt Due Within 5 Years	54%	<10%	10% to 30%	>30%

† Refer to Appendix B (Table B.7) for additional information on the sources and methodology used to determine Uintah's financial condition.

this source. Indicators 7 and 8 reveal the relative degree of general obligation debt owed by the community. Current direct net debt and overall net debt owed by Uintah residents is $62.

Indicators 3 and 9 indicate that town financial management practices are effective. Indicator 3 shows 100 percent efficiency in collecting levied property taxes in 3 of the past 4 years and, indicator 9 shows a debt repayment schedule well-within the useful life of the general obligation bonded facility.

The annual general fund/operating budget of Uintah is approximately $100,000 (see Appendix B, Table B.7, indicator 2). In FY 1986 and FY 1987, Uintah's general fund had a $13,729 and $10,419 surplus, respectively. In FY 1988 the Uintah general operating fund suffered nearly a 17 percent deficit, where expenditures exceeded revenues by $17,380. Consequently, a "weak" indicator rating is attributed to Uintah for indicator 2. The previous year general fund surplus allowed the fiscal budget ending June 30, 1988 to be balanced. Additional comments regarding town financial practices are referenced in: William A. Dahlquist, Certified Public Accountants, Town of Uintah, June 30, 1988, Logan, Utah, February 24, 1989.

Evaluating community finance options.

In 1971, the Town of Uintah issued a general obligation water bond for $70,000. In 1988, the town had $39,000 in principal and interest payments outstanding on this bond. Debt payments, as well as ongoing operation, maintenance, and replacement of the Uintah water system have successfully been accounted for by the Uintah Water Enterprise Fund.

Mayor Kendell commented that "a sinking fund to meet sewer revenue bond obligations would be established if the community decided to construct sewer facilities." (Kendell, 1989). Asked how the necessary revenues would be generated, Mayor Kendell responded, "with $2.3 million in sewer project need and roughly only 200 households to pay for that need, we can't. Maybe we can avoid conveying the wastewater to Central Weber and use absorption trenches or mound the septic fields. Project costs, no doubt, would be considerably less. $20.00/month user charges might then be possible. Engineering and financial alternatives need to be evaluated before I can say more." (Kendell, 1989).

Assessing the community's "ability to pay."

The Town of Uintah is not in a strong financial position to pay for nearly $2.4 million in wastewater treatment improvements (see Table 14). Uintah has 170 full-time households and 8 businesses to be served by the proposed wastewater facility, corresponding to an EHU of 186. Referring to Table 14, it is noted that a state loan at zero percent interest and a 20 year amortization rate results in a user fee of 2.74 percent MHI. Even higher MHI percentages exist for the other two funding scenarios. Uintah's less than strong demographic condition will most likely prevent the BWPC from lending money to Uintah. Consequently, despite the predominantly strong indicators revealed in Table 13, Uintah would have difficulty financing 1.7 million even at a zero percent interest rate and a much longer amortization rate. Grant financing is required to meet the proposed project funding needs. Additional calculations are required to determine the exact loan amount which Uintah residents can afford. An amount equal to $650,000 at zero percent interest and a 20 year amortization rate is one possibility. This scenario results in a MHI of 0.81 percent and monthly payments per EHU equalling $14.56.

TABLE 14.
Project Funding Scenario, Uintah Town, Utah.

Community Name:	Uintah		
Community MHI, $:	21,601		
Project Cost, $:	2,387,000		
Number of EHUs:	186		
Hook-up Fee, $:	1,000		
Net Project Cost, $:	2,201,000		
	Scenario 1	Scenario 2	Scenario 3
Loan Amount, $:	2,201,000	2,201,000	2,201,000
Annual Interest Rate, %	0.0	5.0	10.0
Amortization Period, Yrs.	20	20	20
Monthly Payment per EHU, $	49.31	78.09	114.19
Annual Payment per EHU, $	591.67	937.14	1,370.33
Payment as % of MHI	2.74	4.34	6.34

Identifying market constraints to issuing debt.

Existing constraints on Uintah's ability to finance debt include: (1) limited financial and engineering expertise; (2) high project costs but small population base; and, (3) lack of commercial base.

DISCUSSION OF CASE STUDIES

In the previous section, detailed case studies were prepared for each of the seven study communities. In each case study, the community's wastewater treatment needs, financial condition, "ability to pay," finance options, and constraints to issuing debt were documented.

In this section, the research data used in the previous section's case studies are summarized and compared. Comparisons between the study communities help define which factors limit a small community's ability to afford construction of wastewater treatment facilities. The following factors potentially limit ability:

(1) the cost of the wastewater treatment project;
(2) community size and the number of equivalent household units over which project costs can be distributed;
(3) the current economic condition of the study community;
(4) the ability of the community to reduce costs and/or raise additional revenues for the project; and,
(5) community long-term debt finance options for the wastewater treatment project.

Before discussing the above five factors, it is helpful to summarize the proposed wastewater treatment project of each of the seven study communities. Table 15 summarizes each community's wastewater project and, where applicable, gives the community's project priority rating.

As required by Public Law 92-500 Sections 216 and 303 (e), the Utah Bureau of Water Pollution Control annually prepares a wastewater treatment project priority list (PPL). This list helps the state determine the relative importance of community wastewater treatment projects. Communities with the highest rating, i.e, a rating close to one, are viewed as having the highest degree of wastewater treatment need in the state. A high PPL rating, however, does not mean that a community will receive preferential funding from the state. PPL ratings do not take into account a community's current financial situation. Rather, PPLs are determined using a point system, whereby, a community's proposed wastewater treatment project is attributed points based on a series of environmental and health factors, such as the number of people affected, the quality of the receiving water, and so forth. The

community which tallies the most points, based on the established criteria, has the highest PPL rating. The "State of Utah Wastewater Project Priority List for Fiscal Year 1989" had over 100 rated projects.

TABLE 15.
1989 Wastewater Treatment Project Priority Listing
and Description of Project Need for 7 Utah Communities.

		Project Description			
Study Community	Priority Rating	Improve Existing System to Meet Secondary Treatment Standards	New Interceptor	New Treatment	Treatment @ Neighboring Facility
Hiawatha Town	17	X			
Hyde Park City	35		X		X
Kamas City	21	X			
Manila Town	9	X		X	
Scofield Town	7		X	X	
South Weber City	34		X		X
Uintah Town	not rated		X		X

Table 15 presents the project priority rating of each of the seven study communities. As shown, all of the study communities except Uintah Town were rated on the "State of Utah Wastewater Project Priority List for Fiscal Year 1989." Scofield Town and Manila Town, for reasons detailed in the previous case study section, have the highest PPL ratings. Less urgent projects, relatively speaking, are South Weber City and Hyde Park City, which are rated 34 and 35, respectively. Given the 1989 PPL, Uintah Town's wastewater treatment project is the least urgent; it is not rated.

With an overall goal of meeting secondary discharge standards, Table 15 describes each community's specific wastewater treatment project. Four municipalities, Hyde Park City, Scofield Town, South Weber City, and Uintah Town, need new interceptor sewers to meet the 1972 Federal Water Pollution Control Act discharge standards. Of these four municipalities only Scofield Town proposes to provide its own treatment; Hyde Park, South Weber, and Uintah each intend to provide treatment at neighboring treatment facilities. Hiawatha Town, Kamas City, and Manila Town each propose to improve their existing wastewater treatment system to meet secondary discharge standards. Manila will abandon its

existing lagoon system upon completion of a new lagoon system at a more favorable site.

A community's willingness and ability to afford construction of a wastewater treatment facility to meet secondary discharge standards is significantly affected by the cost of the proposed improvements. Figure 1 illustrates the total and net wastewater construction costs for each of the seven study communities. The net loan amount differs from the entire loan amount for Hyde Park City, Scofield Town, South Weber City, and Uintah Town because a one-time $1,000 hook-up fee for every currently existing EHU is assumed.

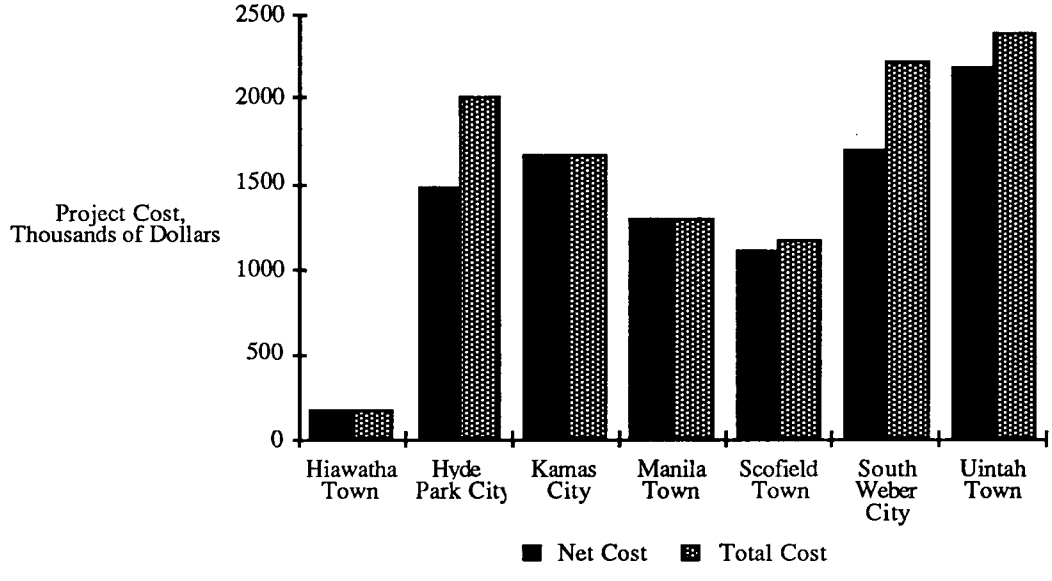

Figure 1. Total and Net Wastewater Construction Costs in Seven Utah Communities (1988).

It is noted that project costs for each community, except Hiawatha Town, are greater than $1 million. Hyde Park City, South Weber City, and Uintah Town have the highest project costs, with approximately $2 million in proposed collection, interceptor, and lateral sewers. Kamas City's lagoon expansion is the next highest project cost with slightly over $1.6 million in need. This is followed by Manila Town, then Scofield Town, followed by Hiawatha Town, which has the lowest project costs.

Given the discussion of Figure 1, it is noted that project costs increase with the degree of construction required for the project. Hyde Park City, South Weber City, and Uintah Town, for example have the highest project costs of the seven study communities, even though treatment is provided at neighboring facilities. Extensive collection systems have a high project cost attached with them. Lagoon construction can also involve project costs well over $1 million; however, because labor and materials are not as extensively used, as with collection systems, construction costs are less.

The U.S. Environmental Protection Agency (EPA) and the Utah State Bureau of Water Pollution Control (BWPC) are aware of the relative costs of the various wastewater treatment technologies. In writing the 1987 Water Quality Act, Congress showed its awareness of this issue, by creating financial incentives for communities which implement alternative technologies for wastewater treatment facilities. Alternative technologies, according to Title II Section 201 (g) (5) of the Water Quality Act, are to be studied and evaluated and, include such technologies as constructed wetlands, lagoons, and mounded septic fields. Such technologies, as a general statement, are less expensive than traditional (urban) facilities. Table 16 summarizes, by community, the treatment option chosen by the project engineer, the community, and the BWPC (Utah BWPC engineers review the proposed wastewater facility construction plans for each community; the BWPC is also involved in the planning, development, and financing of all wastewater projects in the state).

TABLE 16.
Treatment Option, by Community.

	Treatment Option
Hiawatha Town	lagoon
Hyde Park City	treatment @ neighboring facility
Kamas City	lagoon
Manila Town	lagoon
Scofield Town	subsurface drainfield
South Weber City	treatment @ neighboring facility
Uintah Town	treatment @ neighboring facility

As reported by community leaders in each of the seven communities, innovative and alternative wastewater treatment processes were systematically evaluated by project engineers as a potential means of reducing project costs. As noted in Table

15, Hyde Park City, South Weber City, and Uintah Town have proposed to provide treatment at neighboring treatment facilities. In each of the three communities, problems with seasonal saturation of possible building sites makes treatment at a neighboring site the most cost-effective alternative.

Because lagoons and subsurface drainfields classify as alternative wastewater treatment technologies, their use in Hiawatha Town, Manila Town, Kamas City, and Scofield Town qualifies each community to receive preferential financing from the Utah State Revolving Fund. Besides better financing, the use of alternative technologies (as an improvement to the existing system or to provide new treatment) has an additional benefit of reducing project costs. Mechanical and maintenance costs are generally minimized when lagoon systems are used and pumping station facilities are kept to a minimum. The proposed locations for Hiawathas, Manilas, and Kamas's lagoons are at locations below the elevation of each community's population center. Consequently, gravity flow is used to conduct most of the wastewater to the treatment facility, thereby, minimizing pumping costs.

Because every community has limited resources, the cost-effectiveness of their wastewater treatment facility is important. In an attempt to evaluate each community's finance options for the proposed wastewater treatment project, local officials were asked how additional revenues could be raised and/or project costs reduced. Responses of the community leaders (to these two general questions and more specific questions outlined in Appendix A) are summarized below.

The four local revenue sources most likely to be used for debt repayment are, in descending order of importance, user charges, new connection fees, annexation fees, and developer impact fees. Use of special assessment fees, such as developer impact fees and special use fees to groups using public facilities, however, were not pervasive. These fees proved unattractive to the study communities because of the fear that their use would dissuade developers, or other groups from choosing a site for their activity within municipal boundaries. Consequently, local ordinances requiring these groups to financially support general community infrastructure, let alone on-site infrastructure, were nonexistent in all the study communities except Kamas City.

There seems to be a consensus among community leaders about keeping debt financing to a minimum, therefore, advocating "pay-as-you-go" financing. "Pay-as-you-go" financing, however, uses a proportion of general fund revenues to

support a capital reserve account. As of 1989, only two of the study communities (Hyde Park City and South Weber City) had established capital reserve account. It can thus be assumed that either (a) the five remaining communities will not significantly phase the construction of their wastewater treatment facilities or (b) the proposed facility is not intended for construction for a number of years.

Each study community has proved successful, though to varying degrees of responsibility, in managing their enterprise funds and general obligation debt. Consequently, none of the study communities are currently hindered by excessive outstanding bond obligations.

A special service district was established north of Scofield Town to provide sewerage for the lakeshore campsites. With the power to levy taxes, user charges, and other fees, this special district helped to create lower monthly user charges in the Town of Scofield due to the effects of economies of scale.

Figure 2 compares each community's net project cost to the number of EHUs over which construction costs may be spread. It depicts annual EHU charges with a "best scenario" financial loan package (zero percent interest and a 20 year amortization period) for the net loan amount. The net loan amount differs from the total loan amount as presented with Figure 1. The estimated number of EHUs per community is given in parentheses under each community name (on the x-axis).

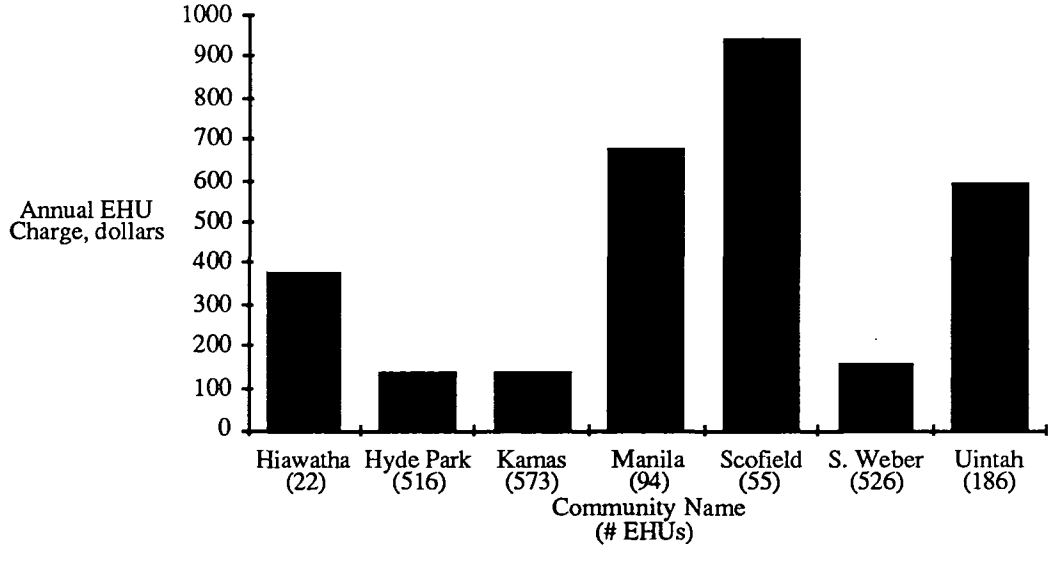

Figure 2. Annual Charge per EHU for Each Study Community.

Monthly EHU charges for each community are one-twelfth the amount depicted in Figure 2. These monthly charges and other project cost information are presented in Table 17. BWPC guidelines state that user fees between 0.75 and 1.5 percent of MHI signify a reasonable local share of financial burden. Even this "best scenario" financial loan package shows that only Hyde Park, Kamas, and South Weber Cities can reasonably afford to construct wastewater treatment facilities to meet secondary discharge standards. The Towns of Scofield, Manila, and Uintah are unable to reasonably afford construction costs, because of limited EHUs and other factors stated in the individual case studies. Although user fees for Hiawatha approach the BWPC guidelines, adverse economic conditions, as documented in the previous case study section, prevent Hiawatha from equitably affording the project cost.

TABLE 17.
"Best Scenario" Loan Package for Each Study Community.

	0% Annual Interest Rate and 20 Year Amortization Period for the Net Loan Amount				
Study Community	Net Loan Amount (in thousands)	Annual User Fee per EHU, $	Monthly User Fee per EHU, $	MHI, $	Payment as % MHI
Hiawatha	167	380	32	24,952	1.52
Hyde Park	1500	145	12	22,041	0.66
Kamas	1673	146	12	22,041	0.66
Manila	1300	691	57	28,244	2.45
Scofield	1118	950	79	21,192	4.48
S. Weber	1700	162	14	23,340	0.69
Uintah	2201	592	49	21,601	2.74

CONCLUSIONS

Seven communities were studied in this report. Three of the study communities are third class cities and have populations that range between 1,275 (Kamas City) and 2,208 (South Weber City). Hyde Park City, the third city reported on in this report, has an estimated population of 1,900. The four remaining study communities are defined as towns and, thereby, have populations of 800 people or less. Explicitly, the populations of the four towns are 40 people in Hiawatha, 270 in Manila, 150 in Scofield, and 510 in Uintah.

Of the seven study communities, none of the towns were able to reasonably afford construction of wastewater treatment facilities to meet secondary discharge standards using the "best scenario" loan package enumerated in Table 17. Conversely, wastewater treatment user fees for each of the third class cities were reasonable.†

The lack of a population over which project costs can be spread negatively affects a community's ability to afford construction of needed wastewater treatment facilities. In towns especially, the local financial contribution to wastewater treatment projects is limited by a small population and a limited number of households. At what point a project becomes unaffordable to a small community is dependent on population (or, more precisely, equivalent household units), as well as a number of factors, including, but not limited to the following:

(1) the required local contribution to project costs;
(2) the economic state or fiscal strength of the community under consideration;
(3) community opportunities to attract outside investors or raise additional revenues for the proposed wastewater treatment project.; and,
(4) viable opportunities for the community to decrease project costs.

---

† Reasonable in this context is defined to include Utah State Bureau of Water Pollution Control guidelines, namely that user fees between 0.75 and 1.5 percent of MHI signify a reasonable local share of financial burden.

In none of the study communities were project costs reduced by greater than 20 percent of the EPA "1988 Needs Survey of Publicly Owned Treatment Works." In each of the communities wastewater treatment technological alternatives were evaluated by project engineers. Engineering evaluations proved valuable in terms of providing viable treatment alternatives capable of meeting secondary treatment standards for municipal dischargers. However, significant cost reductions as a result of these evaluations were noted in only two of the case studies, Manila and Scofield Towns.

In each of the study communities, either a "strong" or "average" indicator rating for direct net debt per capita was recorded. These positive ratings identify an ability on the part of each community to raise additional capital from traditional means, i.e., increases in property taxes or issuance of a bond secured with user fees. However, innovative financing techniques, such as the use of annexation fees, exactions, and private-public arrangements were not implemented or proposed for implementation in any of the study communities.

The required local contribution to project costs is a factor which affects the affordability of a project to a given population. As the Utah State BWPC guidelines suggest, 1.5 percent of MHI, given favorable economic and demographic conditions, should be the maximum contribution per household unit. If the economic health or fiscal strength of the community under consideration is questionable, then the maximum contribution per household should be less in order to ensure adequate repayment by the community and, subsequently, the on-going maintenance of the state revolving fund.

To summarize, the point at which a project becomes (un)affordable to a small community is dependent on project costs, a communities ability's to raise additional revenues (either traditionally or with innovation), the fiscal strength of the community, required local contribution levels, and population (or number of EHUs).

RECOMMENDATIONS

Recommended actions to improve the affordability of wastewater treatment facilities for small communities and, particularly towns, are:

(1) to implement more cost-effective technologies in order to reduce project costs;

(2) to develop a (training) program, whereby, local officials learn to better fund capital improvement items using both traditional and innovative revenue raising techniques. One possible program would involve the development of a state/federal incentive for communities to establish a wastewater treatment capital improvement reserve fund in advance of construction;

(3) to develop a modified version of the EPA Financial Capability Guidebook indicators that would more efficiently identify the fiscal strengths and weaknesses of small communities; and,

(4) to identify criteria, whereby, required local contribution levels could be waived given suitable determination of "hardship." The waiving of contribution requirements could be manifested in a number of ways. Two possibilities include: 1) the re-institution of direct financial assistance grants for "hardship" communities and, 2) the modification of the Clean Water Act to exempt municipal dischargers from secondary treatment standards, where the human health and environmental consequences of relaxed standards would not be consequential.

REFERENCES

Allen, Ray. 1989. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, South Weber City. Certified Public Accountant. February 4.

-- 1988. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1988 (With Accountants Report Therein). Salt Lake City, Utah. November 3.

-- 1987. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1987 (With Accountants Report Therein). Salt Lake City, Utah. December 12.

-- 1986. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1986. Salt Lake City, Utah. November 7.

-- 1985. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1985. Salt Lake City, Utah. December 11.

Atkinson, Terry. 1989. Interview. City of Kamas Wastewater Superintendent and Watermaster. August 4.

Balls, Robert J. 1989. Interview. Hyde Park City Mayor. July 3.

Blazzard, James. 1989. Interview. Kamas City Mayor. August 3.

Bouchard, Rex. 1989. Interview. South Weber City Mayor. August 1.

Bishop, Roger. 1989. Interview. Utah Bureau of Water Pollution Control Project Engineer. October 2.

Bradfield, Gladys. 1989. Interview. Scofield Town Clerk. August 2.

-- 1987. Scofield Town, Fiscal Year Ending June 30, 1986, Balance Sheet. Scofield Town Clerk. January.

Briggs, Gene. 1989. Interview. Daggett County, Utah Assessor. August 7.

Bureau of Water Pollution Control, Division of Environmental Health, Department of Health, State of Utah. 1988a. Utah State Revolving Fund Annual Report FY 1988. December 29.

-- 1988b. "State of Utah Wastewater Treatment Project Priority List, Federal Fiscal Year 1989." September.

-- 1988c. "Drinking Water and Wastewater Funding Needs." Report Presented to the Department of Health, September 21.

-- 1986. Scofield Town Financial Capability Summary. Salt Lake City, Utah. March 3.

-- 1984. South Weber Feasibility Report: Wastewater Loan and Credit Enhancement Program. Salt Lake City, Utah. January 10, 1984.

Clark, Shirl. 1989. Interview. Fiscal Specialist Community Impact Board. October.

Crane, Davis, Johnson & Christenen, Certified Public Accountants. 1987. City of Kamas with Report of Certified Public Accountants Year Ended June 30, 1987. Ogden, Utah. October 28.

-- 1986. City of Kamas with Report of Certified Public Accountants Year Ended June 30, 1986. Ogden, Utah. November 26.

Dabb, Delbert. 1989. Interview. Weber County, Utah Assessor. October 2.

Dahlquist, William A. 1989. Town of Uintah, June 30, 1988. Logan, Utah. February 24.

-- 1987. Town of Uintah, June 30, 1987. Logan, Utah. December 4.

-- 1986. Town of Uintah, June 30, 1986. Logan, Utah. December 24.

Davidson, Sidney and Weil, Roman L. 1983. Handbook of Modern Accounting. New York: McGraw Hill Book Company.

Environmental Protection Agency. 1988a. "Needs Survey of Publicly Owned Treatment Works." Washington, D.C.: Governmental Printing Office, November.

-- 1988b. "Municipalities, Small Business, and Agriculture: the Challenge of Meeting Environemental Responsibility." Washington, D.C.: Governmental Printing Office, September.

-- 1988c. The Clean Water Act: 1987 Amendments. Washington, D.C.: Governmental Printing Office, March.

-- 1988d. Guidebook to State Revolving Funds. Washington, D.C.: Governmental Printing Office, February.

-- 1984. Financial Capability Guidebook. Washington, D.C.: Governmental Printing Office, March.

Eccly, Bob. 1989. Interview. Hiawatha Town Engineer. August 3.

Every, Lona. 1989. Interview. Hiawatha Town Clerk. August 3.

-- 1988. Hiawatha Town, Fiscal Year Ending June 30, 1988, Balance Sheet. Hiawatha Town Clerk. December.

Frazier, Blake. 1989. Interview. Summit County, Utah Auditor. October 10.

General Accounting Office. 1981. "User Charge Revenues for Wastewater Treatment Plants: Insufficient to Cover Operation and Maintenance," CED-82-1, December.

Grizzle, Charles. 1989. "Municipalities Face Funding Shortfalls," Nations City Weekly, February, p. 95.

Grunig, Marilyn. 1989. Interview. Hyde Park City Councilwoman. July 3.

Hawkins, Judy. 1988. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, Hyde Park City. Hyde Park City Recorder. November 16.

Hess, Nancy. 1989. Interview. Bureau of Water Pollution Control Fiscal Specialist. October 2.

-- 1988. "Implementation of the SRF Program: A Look from the State of Utah," SRF Update. October, p.1-2.

Kendell, Jay. 1989. Interview. Uintah Town Mayor. August 10.

Kennington, Ruth. 1989. Interview. Davis County, Utah Auditor. October 3.

Kleinfeld, Ira H. 1986. Engineering & Managerial Economics. New York: Holt, Rinehart and Winston, CBS College Publishing.

Krannich, Richard S. and Humphrey, Craig R. 1986. "Using Key Informant Data in Comparative Community Research." Sociological Methods & Research 14, May: 473-493.

Lamb, LeAnn. 1989. Interview. Carbon County Health Administrator. August 2.

Lasche, Bonnie. 1989. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, Kamas City. Kamas City Clerk. February 14.

Lynch, Thomas D. 1979. Budgeting in America. New Jersey: Prentice-Hall, Inc., pp. 288.

Mildon, Sherma. 1989. Interview. Uintah Town Clerk. August 3.

Peterson & Allred, Certified Public Accountants. 1987. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1987. Logan, Utah. October 28.

-- 1986. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1986. Logan, Utah. November 9.

-- 1985. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1985. Logan, Utah. December 12.

Prichard, Norman. 1989. Interview. Carbon County, Utah Auditor. October 5.

Reeves, H. Clyde. 1984. Funding Clean Water. Toronto: Lexington Books, pp. 226.

Rosenberg, Philip. 1978. Is Your City Heading for Financial Difficulty: A Guide-book for Small Cities and Other Governmental Units. Atlanta: Institute of Government, pp. 44.

Scott, Carole. 1989. Interview. Manila Town Mayor. August 7.

Siedler, J.1974. " On Using Informants." American Sociology Review 39, December: 816-831.

Stones, Tamra. 1989. Interview. Cache County, Utah Auditor. October 2.

State of Utah, Department of Health, Division of Environmental Health. 1988. "Wastewater Disposal Regulations, Part II: Standards of Quality for Waters of the State." Revised by Action of the Utah Water Pollution Control Committee, April 21.

United States Department of Agriculture. 1970. Soil Survey: Carbon-Emery Area, Utah. Washington, D.C.: United States Government Printing Office. December.

United States Department of Commerce, Bureau of the Census. 1970. U.S. League of Cities and Towns: Population Figures. Washington, D.C.: Governmental Printing Office. December.

United States Department of Labor, Bureau of Statistics. 1988. Consumer Price Index. Washington, D.C.: Governmental Printing Office. December.

Utah Code Annotated, as amended. 1977. Public Debt. Article XIV, Sections 1 -7.

Utah Office of Planning and Budget, Data Resources Section. 1987. "Utah Data Guide: A Newsletter of Data Users." Utah State Data Center, 6:4. December.

Utah State Auditor and Center for Public Affairs and Administration of the University of Utah. 1988. Comparative Report of Utah Local Government Revenues and Expenditures: Cities and Towns Fiscal Years 1985, 1986, 1987. August.

Utah State Tax Commission, Property Tax Division. 1989. Assessment/ Sales Ratio Study: For the Period January 1, 1987 to June 30, 1988. Salt Lake City, Utah. February.

Winward, Foley & Company. 1987. Town of Manila, Report of Audit, June 30, 1987. Vernal, Utah. December 21.

-- 1986. Town of Manila, Report of Audit, June 30, 1986. Vernal, Utah. Novmeber 28.

APPENDICES

Appendix A.
Interview Questions for Each of the Seven Sampled Communities.

For each of the 7 sampled questions, information regarding the community's wastewater treatment need, financial condition, perceived financial options, "ability to pay," and market constraints to issuing debt were gathered and analyzed. The types of information gathered, by category, are as follows.

Characterizing the community's wastewater treatment needs.

In order to adequately characterize the community's wastewater treatment needs, the following questions were asked of key informants in each community:

(1) In general, how important is the proposed wastewater facility construction project to the overall development of your community?
(2) Please describe your community's current wastewater treatment facilities.
(3) What additional facilities are included in the proposed facilities plan?
(4) What was the motivation for the proposed facilities plan? I.e., discharge standards, public health requirements, anticipated community growth, ...?
(5) Does the proposed wastewater facilities design account for anticipated community growth?
(6) Which sectors of the community would the proposed facilities serve?

Describing the community's financial condition.

To allow for a common basis of comparison, each community's financial condition has been assessed using the indicators presented in Appendix B. Taken from the EPA Financial Capability Guidebook, Office of Water Programs Operation, March, 1984, pages 52 and 59-68, these indicators require the following information. Note that numerous sources, including personal interviews were used to gather this information. Exact sources are referenced for each recorded value and can be found at the end of appendix B.

(1) What is the median per capita income in your community?
(2) What is the current median family income in your community?
(3) What is the current assessed and equalized value of taxable real property in your community?
(4) What do current retail sales in your community equal?
(5) What is the total number of private and public sector jobs in the

community?

(6) What is the number of jobs offered by major economic sector?

(7) Have there been significant economic changes in the region over the past five or ten years?

(8) What are the 3 largest employers and largest taxpayers in the vicinity of your community?

(9) What is the current population in your community?

Evaluating community finance options.

In the process of interviewing local officials, considerable concern was given to the questions of how community leaders perceived additional revenues could be raise and/or project costs could be reduced to finance the proposed wastewater structures. To this end, answers to the following types of questions were sought:

(1) If your community has a wastewater treatment facility, how was this facility previously financed? Please identify the federal, state, and local programs that provided assistance and the amount of total assistance. If a loan was given, what were the terms of the loan?

(2) If your community has a water supply facility, how was this facility financed? Please identify the federal, state, and local programs that provided assistance and the amount of total assistance. If a loan was given, what were the terms of the loan?

(3) How does your community usually finance capital improvements?

(4) Who will operate and own the facilities once constructed?

(5) Has your community considered other alternative financing methods, such as using current revenues ("pay-as-you-go"), reserve funds, g.o. bonds, revenue bonds, lease-purchase agreements, authorities and special districts, special assessments, SRF loan money, other loan sources, exactions, impact fees, public-private negotiations, annexation fees, hook-up charges, and/or "minibonds."

(6) If your community has a treatment need, would a constructed wetland or a natural wetland be a viable treatment alternative?

(7) Do you feel it was (or would be) a good use of your community's money to have engineering firms review various treatment alternatives?

(8) Do you feel engineering services for the proposed wastewater project should be provided by the government?

(8) What limits are believed to exist for own-source funds?

(9) Are expenditures and revenues for wastewater and water supply

facilities managed jointly or independently?

(10) Who operates and owns the wastewater and water supply facilities, if applicable?

(11) Has your community considered a partnership between public and private sectors to meet current or future needs?

(12) Assuming your community is able and willing to assume debt for a wastewater project, which two revenue sources would your community most likely use for debt repayment?

Assessing the community's "ability to pay."

The Utah BWPC evaluates a number of items when assessing a community's "ability to pay.". In part, however, assistance from the BWPC is determined based on: (1) the ability of the political subdivision to obtain funds for the project from other sources or to finance such projects from its own sources; (2) the ability of the political subdivision to repay the loan or other project obligations; (3) whether a "good faith" effort to secure all or part of the services needed from the private sector through privatization was made; (4) whether state financing is needed to keep the overall financial impact of the proposed project from exceeding an annual user charge greater than 1.5 percent of the annual mean household income of community residents; (5) whether local political and economic condition in the community are stable; and, (6) whether the community has an expressed environmental need that will at least, in part, be abetted by implementation of the proposed wastewater treatment structures (BWPC, 1988).

In an attempt to duplicate Utah BWPC thoroughness, information regarding the above 6 items was gathered through personal interviews, review of community financial reports, and application of the MacIntosh spreadsheet program, Excel. See appendix C for details on the formula and theory used for the spreadsheet.

Additional information was also sought regarding the community's debt history. Community debt history questions included in this study were the following:

(1) Has your community ever experienced difficulty in meeting its debt obligations? If so, how was this handled?

(2) Do state mandates exist that restrict your community's ability to finance debt? I.e., limiting taxing authority, debt ceilings linked to property value,...?

(3) Do local mandates exist that restrict the community's ability to finance debt? I.e., limiting taxing authority, debt ceilings linked to

property value,...?

(4) What changes in federal and state funding have affected your community in the past five years? Do you anticipate changes in federal and state funding in the next five years which will affect your community?

(5) What changes in own-source revenue generation have occurred during the past five years? Do you anticipate changes in own-source revenue generation during the next five years?

(6) Is your community considering other capital improvement projects? Has the community established a priority list for the competing projects? What does it entail?

(7) Has your community ever been rejected for either a state or federal loan? If so, why?

Identifying market constraints to issuing debt.

In order to adequately identify the market constraints confronting small Utah communities when issuing debt, both state and local statutes were reviewed and personal interviews were conducted.

During personal interviews of local communty leaders, primarily three questions were asked. These question were as follows:

(1) Is your community's ability to finance the proposed wastewater project limited by: a lack of reserve funds; restricted access to bond market; past difficulty meeting debt obligations; community unwillingness to incur debt; other competing capital impects; a lack of financial guidance; confusion regarding eigibility for state money; and, nonavailability of construction grant money.

(2) What human resource constraints, if any, affect your community's ability to issue debt?

(3) What degree of access does your community have to a bond market?

Review of local and state statutes were sought to identify existing municipal limits on public debt.

Appendix B.
Assessment of Cummunity's Current Financial Condition.

Enclosed in Appendix B are the following items:

(1) Table B, which demonstrates the formulas used to assess each community's financial condition. The spreadsheet program MacIntosh Excel was used in this process, as well as for Tables B.1 - B.7;

(2) Tables B.1 - B.7, which assess each community's financial condition based on the formulas and input data described in Table B;

(3) footnote references for Tables B.1 - B.7.

For additional information regarding the indicators used in each community's current financial assessment refer to:

Environmental Protection Agency. 1984. Financial Capability Guidebook. Washington, D. C.: Governmental Printing Office. March.

Table B: Formulas Used to Assess Each Community's Financial Condition

Indicator 1

	1980-1989
Initial Population	#
Final Population	#
Annual Rate of Change, %	=(C7-C6)/9/C6*100

Indicator 2

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	$	$	$	$
Other Revenues	$	$	$	$
Total Revenues	=C13+C14	=D13+D14	=E13+E14	=F13+F14
Operating Expenditures	$	$	$	$
Debt Service Payments	$	$	$	$
Total Expenditures	=C17+C18	=D17+D18	=E17+E18	=F17+F18
Surplus/Deficit	=C15-C19	=D15-D19	=E15-E19	=F15-F19
Surplus as % of Expenditures	**=C21/C19*100**	**=D21/D19*100**	**=E21/E19*100**	**=F21/F19*100**

Indicator 3

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	$	$	$	$
Property Taxes Levied	$	$	$	$
Tax Collection Rate, %	**=C27/C28*100**	**=D27/D28*100**	**=E27/E28*100**	**=F27/F28*100**

Indicator 4

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	$	$
Assessment Ratio	#	#
Full Market Value of Real Property	=C35/C36	=D35/D36
Tax as % of Full Market Value	**=F13/C35*100**	**=F13/D35*100**

Indicator 5

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	$	$	$	$
Total Overall Net Debt	=C43	=D43	=E43	=F43
Debt Capacity, %	N/A	N/A	N/A	**=F44/C35*100**

Indicator 6

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	$	$	$	$
Personal Income	=C50*(C7-(C7-C6)/9*4)	=D50*(C7-(C7-C6)/9*3)	=E50*(C7-(C7-C6)/9*2)	=F50*(C7-(C7-C6)/9*1)
Debt as % of Personal Income	**=C44/C51*100**	**=D44/D51*100**	**=E44/E51*100**	**=F44/F51*100**

Indicator 7

	FY 1988
Direct Net Debt per Capita, $	=F43/C7

	A	B	C	D	E	F	G
1							
58							
59							
60							
61							
62			**Table B (Continued).**				
63							
64							
65		**Indicator 8**					
66			FY 1988				
67		Overall Net Debt per Capita, $	=F44/C7				
68							
69							
70		**Indicator 9**					
71			FY 1989	FY 1990	FY 1991	FY 1992	
72		Existing G.O. Debt to be Repaid	$	$	$	$	
73			FY 1993				
74			$				
75							
76		Total 5 Year Debt	=C72+D72+E72+F72+C74				
77							
78		Direct Net Debt Due					
79		Within 5 Years, %	**=C74/F43*100**				
80							
81							
82							
83							
84							
85							

Table B.1: Assessment of Hiawatha's Current Financial Condition †

Indicator 1: Population Growth (1) (2)

	1980-1989
Initial Population	249
Final Population	40
Annual Rate of Change, %	**-9.33**

Indicator 2: General Fund Surplus/Deficit (3)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	N/A	28,430	28,555	23,963
Other Revenues	N/A	29,685	22,524	17,348
Total Revenues	N/A	58,115	51,079	41,311
Operating Expenditures	N/A	47,025	51,079	41,311
Debt Service Payments	N/A	0	0	0
Total Expenditures	N/A	47,025	51,079	41,311
Surplus/Deficit	N/A	11,090	0	0
Surplus as % of Expenditures	N/A	**23.58**	**0.00**	**0.00**

Indicator 3: Real Property Tax Collection Rate (3)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	N/A	28,430	28,555	23,963
Property Taxes Levied	N/A	29,000	28,999	23,963
Tax Collection Rate, %	N/A	**98.03**	**98.47**	**100.00**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (5)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	6,646,446	6,646,446
Assessment Ratio	1.01	1.11
Full Market Value of Real Property	6,580,640	5,987,789
Tax as % of Full Market Value	**0.36**	**0.40**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (3)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	0	0	0	0
Total Overall Net Debt	0	0	0	0
Debt Capacity, %	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	8,674	9,558	10,553	11,606
Personal Income	1,144,968	1,051,380	918,111	731,178
Debt as % of Personal Income	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**0**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**0**

Indicator 9: % Direct Net Debt Due Within 5 Years (3)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	0	0	0	0	0
Total 5 Year Debt, $	0				
Direct Net Debt Due Within 5 Years, %	**0.00**				

† Footnotes (1-6) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the communi

Table B.2: Assessment of Hyde Park's Current Financial Condition †

Indicator 1: Population Growth (1) (7)

	1980-1989
Initial Population	1495
Final Population	1900
Annual Rate of Change, %	**3.01**

Indicator 2: General Fund Surplus/Deficit (7) (8) (9)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	27,740	28,032	27,206	28,915
Other Revenues	193,116	173,131	190,747	N/A
Total Revenues	220,856	201,163	217,953	N/A
Operating Expenditures	145,755	166,173	253,435	N/A
Debt Service Payments	25380	0	0	N/A
Total Expenditures	171,135	166,173	253,435	N/A
Surplus/Deficit	49,721	34,990	-35,482	N/A
Surplus as % of Expenditures	**29.05**	**21.06**	**-14.00**	N/A

Indicator 3: Real Property Tax Collection Rate (7) (8) (9)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	27,740	28,032	27,206	28,915
Property Taxes Levied	27,740	28,032	27,806	28,915
Tax Collection Rate, %	**100.00**	**100.00**	**97.84**	**100.00**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (10)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	3,044,017	3,044,017
Assessment Ratio	1.01	1.07
Full Market Value of Real Property	3,013,878	2,844,876
Tax as % of Full Market Value	**0.96**	**1.02**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (7) (8) (9)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	664,272	645,100	625,882	74,000
Total Overall Net Debt	664,272	645,100	625,882	74,000
Debt Capacity, %	**N/A**	**N/A**	**N/A**	**2.4310**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	7,663	8,444	9,304	10,252
Personal Income	13,180,360	14,903,660	16,840,240	19,017,460
Debt as % of Personal Income	**5.04**	**4.33**	**3.72**	**0.39**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**39**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**39**

Indicator 9: % Direct Net Debt Due Within 5 Years (7)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	5000	5000	5500	5500	5800
Total 5 Year Debt	26,800				
Direct Net Debt Due Within 5 Years, %	**36.22**				

† Footnotes (7-10) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the communi

Table B.3: Assessment of Kamas's Current Financial Condition †

Indicator 1: Population Growth (1) (11)

	1980-1989
Initial Population	1064
Final Population	1275
Annual Rate of Change, %	**2.20**

Indicator 2: General Fund Surplus/Deficit (11) (12))

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	N/A	66,245	77,937	91,073
Other Revenues	N/A	119,075	119,391	102,895
Total Revenues	N/A	185,320	197,328	193,968
Operating Expenditures	N/A	180,777	200,726	179,937
Debt Service Payments	N/A	0	0	0
Total Expenditures	N/A	180,777	200,726	179,937
Surplus/Deficit	N/A	4,543	-3,398	14,031
Surplus as % of Expenditures	**N/A**	**2.51**	**-1.69**	**7.80**

Indicator 3: Real Property Tax Collection Rate (11) (12))

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	N/A	66,245	77,937	91,073
Property Taxes Levied	N/A	N/A	77,937	91,073
Tax Collection Rate, %	**N/A**	**N/A**	**100.00**	**100.00**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (13)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	21,848,139	21,848,139
Assessment Ratio	0.83	0.98
Full Market Value of Real Property	26,323,059	22,294,019
Tax as % of Full Market Value	**0.35**	**0.41**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (11) (12)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	0	0	0	0
Total Overall Net Debt	0	0	0	0
Debt Capacity, %	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	7,663	8,444	9,304	10,252
Personal Income	9,050,003	10,175,020	11,425,312	12,835,504
Debt as % of Personal Income	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**0**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**0**

Indicator 9: % Direct Net Debt Due Within 5 Years (13)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	0	0	0	0	0
Total 5 Year Debt	**0**				
Direct Net Debt Due Within 5 Years, %	**0.00**				

† Footnotes (11-13) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the co

Table B.4: Assessment of Manila's Current Financial Condition †

Indicator 1: Population Growth (1) (13)

	1980-1989
Initial Population	272
Final Population	270
Annual Rate of Change, %	**-0.08**

Indicator 2: General Fund Surplus/Deficit (15)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	N/A	16,875	18,597	19,210
Other Revenues	N/A	85,033	68,702	71,529
Total Revenues	N/A	101,908	87,299	90,739
Operating Expenditures	N/A	77,587	80,791	69,657
Debt Service Payments	N/A	0	6,311	0
Total Expenditures	N/A	77,587	87,102	69,657
Surplus/Deficit	N/A	24,321	197	21,082
Surplus as % of Expenditures	**N/A**	**31.35**	**0.23**	**30.27**

Indicator 3: Real Property Tax Collection Rate (15)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	N/A	N/A	38,597	N/A
Property Taxes Levied	N/A	N/A	38,597	N/A
Tax Collection Rate, %	**N/A**	**N/A**	**100.00**	**N/A**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (16)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	10,866,886	10,866,886
Assessment Ratio	0.95	1.16
Full Market Value of Real Property	11,438,827	9,368,005
Tax as % of Full Market Value	**0.17**	**0.21**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (14) (15)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	0	0	0	0
Total Overall Net Debt	0	0	0	0
Debt Capacity, %	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	9,820	10,820	11,922	13,137
Personal Income	2,651,400	2,921,400	3,218,940	3,546,990
Debt as % of Personal Income	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**0**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**0**

Indicator 9: % Direct Net Debt Due Within 5 Years (15)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	0	0	0	0	0
Total 5 Year Debt	0,000				
Direct Net Debt Due Within 5 Years, %	**0.00**				

† Footnotes (14-16) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the comr

Table B.5: Assessment of Scofield's Current Financial Condition †

Indicator 1: Population Growth (1) (17)

	1980-1989
Initial Population	105
Final Population	150
Annual Rate of Change, %	**4.76**

Indicator 2: General Fund Surplus/Deficit (18)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	4,043	4,043	N/A	N/A
Other Revenues	20,130	12,115	N/A	N/A
Total Revenues	24,173	16,158	N/A	N/A
Operating Expenditures	25,834	14,719	N/A	N/A
Debt Service Payments	0	0	N/A	N/A
Total Expenditures	25,834	14,719	N/A	N/A
Surplus/Deficit	-1,661	1,439	N/A	N/A
Surplus as % of Expenditures	**-6.43**	**9.78**	**N/A**	**N/A**

Indicator 3: Real Property Tax Collection Rate (18)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	4,043	4,043	N/A	N/A
Property Taxes Levied	4,043	4,043	N/A	N/A
Tax Collection Rate, %	**100.00**	**100.00**	**N/A**	**N/A**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (5)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	1,967,139	1,967,139
Assessment Ratio	1.01	1.11
Full Market Value of Real Property	1,947,662	1,772,197
Tax as % of Full Market Value	**0.21**	**0.21**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (17) (18)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	0	0	0	0
Total Overall Net Debt	0	0	0	0
Debt Capacity, %	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	8,199	9,034	9,954	10,968
Personal Income	1,024,875	1,084,080	1,144,710	1,206,480
Debt as % of Personal Income	**0.00**	**0.00**	**0.00**	**0.00**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**0**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**0**

Indicator 9: % Direct Net Debt Due Within 5 Years (18)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	0	0	0	0	0
Total 5 Year Debt	0				
Direct Net Debt Due Within 5 Years, %	**0.00**				

† Footnotes (17-18) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the community.

Table B.6: Assessment of South Weber's Current Financial Condition †

Indicator 1: Population Growth (1) (19)

	1980-1989
Initial Population	1575
Final Population	2208
Annual Rate of Change, %	**4.47**

Indicator 2: General Fund Surplus/Deficit (20) (21)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	59,707	60,695	73,023	78,414
Other Revenues	224,339	207,294	193,971	207,112
Total Revenues	284,046	267,989	266,994	285,526
Operating Expenditures	193,385	221,396	202,523	219,307
Debt Service Payments	0	0	0	0
Total Expenditures	193,385	221,396	202,523	219,307
Surplus/Deficit	66,245	66,245	64,471	66,219
Surplus as % of Expenditures	**34.26**	**29.92**	**31.83**	**30.19**

Indicator 3: Real Property Tax Collection Rate (20)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	59,707	60,695	73,023	78,414
Property Taxes Levied	62,900	63,000	73,000	78,414
Tax Collection Rate, %	**94.92**	**96.34**	**100.03**	**100.00**

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (22)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	89,503,230	89,503,230
Assessment Ratio	0.91	0.96
Full Market Value of Real Property	98,355,198	93,232,531
Tax as % of Full Market Value	**0.08**	**0.08**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (21)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	451,388	431,378	407,103	383,628
Total Overall Net Debt	451,388	431,378	407,103	383,628
Debt Capacity, %	**N/A**	**N/A**	**N/A**	**0.3900**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	8,114	8,941	9,852	10,856
Personal Income	15,632,973	17,855,177	20,367,368	23,206,509
Debt as % of Personal Income	**2.89**	**2.42**	**2.00**	**1.65**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**174**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**174**

Indicator 9: % Direct Net Debt Due Within 5 Years (21)

	FY 1989	FY 1990	FY 1991	FY 1992
Existing G.O. Debt to be Repaid	23,175	22,750	22,312	21,863

FY 1993
21,400

Total 5 Year Debt	111,500
Direct Net Debt Due Within 5 Years, %	**29.06**

† Footnotes (19-22) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the community.

Table B.7: Assessment of Uintah's Current Financial Condition †

Indicator 1: Population Growth (1) (23)

	1980-1989
Initial Population	439
Final Population	628
Annual Rate of Change, %	**4.78**

Indicator 2: General Fund Surplus/Deficit (24)

	FY 1985	FY 1986	FY 1987	FY 1988
Property Taxes	N/A	18,200	19,514	20,878
Other Revenues	N/A	141,419	65,729	66,353
Total Revenues	N/A	159,619	85,243	87,231
Operating Expenditures	N/A	145,890	74,824	104,611
Debt Service Payments	N/A	0	0	0
Total Expenditures	N/A	145,890	74,824	104,611
Surplus/Deficit	N/A	13,729	10,419	-17,380
Surplus as % of Expenditures	N/A	**9.41**	**13.92**	**-16.61**

Indicator 3: Real Property Tax Collection Rate (24)

	FY 1986	FY 1986	FY 1987	FY 1988
Property Taxes Collected	N/A	18,200	19,514	20,878
Property Taxes Levied	N/A	17,001	17,911	N/A
Tax Collection Rate, %	N/A	**107.05**	**108.95**	N/A

Indicator 4: Property Tax Revenues as % of Full Market Value (FMV) (4) (25)

	FY 1988 Lower Bound	FY 1988 Upper Bound
Assessed Value of Real Property	13,531,059	13,531,059
Assessment Ratio	0.92	1.03
Full Market Value of Real Property	14,707,673	13,136,950
Tax as % of Full Market Value	**0.14**	**0.16**

Indicator 5: Tax-Supported Debt as % of FMV of Real Property (24)

	FY 1985	FY 1986	FY 1987	FY 1988
General Obligation (G.O.) Debt	48,000	45,000	42,000	39,000
Total Overall Net Debt	48,000	45,000	42,000	39,000
Debt Capacity, %	N/A	N/A	N/A	**0.2652**

Indicator 6: Tax-Supported Debt as % of Personal Income (1) (6)

	FY 1985	FY 1986	FY 1987	FY 1988
Per Capita Income	7,510	8,275	9,118	10,047
Personal Income	4,085,440	4,675,375	5,343,148	6,098,529
Debt as % of Personal Income	**1.17**	**0.96**	**0.79**	**0.64**

Indicator 7: Current Direct Net Debt per Capita

	FY 1988
Direct Net Debt per Capita, $	**62**

Indicator 8: Overall Net Debt per Capita

	FY 1988
Overall Net Debt per Capita, $	**62**

Indicator 9: % Direct Net Debt Due Within 5 Years (24)

	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
Existing G.O. Debt to be Repaid	4,000	4,000	4,000	4,000	5,000
Total 5 Year Debt	21,000				
Direct Net Debt Due Within 5 Years, %	**53.85**				

† Footnotes (23-25) are listed at the end of Appendix B.

Note: Indicators 1-9, as calculated, do not reflect the financial impact of the proposed project on the community.

Appendix B.
References- Tables B.1-7.

(1) Utah Office of Planning and Budget, Data Resources Section. 1987. "Utah Data Guide: A Newsletter of Data Users." Utah State Data Center, 6:4. December.

(2) Every, Lona. 1989. Interview. Hiawatha Town Clerk. August 3.

(3) Every, Lona. 1988. Hiawatha Town, Fiscal Year Ending June 30, 1988, Balance Sheet. Hiawatha Town Clerk. December.

(4) Utah State Tax Commission, Property Tax Division. 1989. Assessment/ Sales Ratio Study: For the Period January 1, 1987 to June 30, 1988. Salt Lake City, Utah. February.

(5) Prichard, Norman. 1989. Interview. Carbon County, Utah Auditor. October 5.

(6) United States Department of Labor, Bureau of Statistics. 1988. Consumer Price Index. Washington, D.C.: Governmental Printing Office. December.

(7) Hawkins, Judy. 1988. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, Hyde Park City. Hyde Park City Recorder. November 16.

(8) Utah State Auditor and Center for Public Affairs and Administration of the University of Utah. 1988. Comparative Report of Utah Local Government Revenues and Expenditures: Cities and Towns Fiscal Years 1985, 1986, 1987. August.

(9) Peterson & Allred, Certified Public Accountants. 1987. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1987. Logan, Utah. October 28.
-- 1986. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1986. Logan, Utah. November 9.
-- 1985. City of Hyde Park Comprehensive Annual Financial Report for the Year Ended June 30, 1985. Logan, Utah. December 12.

(10) Stones, Tamra. 1989. Interview. Cache County, Utah Auditor. October 2.

(11) Lasche, Bonnie. 1989. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, Kamas City. Kamas City Clerk. February 14.

(12) Crane, Davis, Johnon & Christenen, Certified Public Accountants. 1987. City of Kamas with Report of Certified Public Accountants Year Ended June 30, 1987. Ogden, Utah. October 28.
-- 1986. City of Kamas with Report of Certified Public Accountants Year Ended June 30, 1986. Ogden, Utah. November 26.

(13) Frazier, Blake. 1989. Interview. Summit County, Utah Auditor. October 10.

(14) Scott, Carole. 1989. Interview. Manila Town Mayor. August 7.

(15) Winward, Foley & Company. 1987. Town of Manila, Report of Audit, June 30, 1987. Vernal, Utah. December 21.
-- 1986. Town of Manila, Report of Audit, June 30, 1986. Vernal, Utah. Novmeber 28.

(16) Briggs, Gene. 1989. Interview. Daggett County, Utah Assessor. August 7.

(17) Bradfield, Gladys. 1989. Interview. Scofield Town Clerk. August 2.

(18) Bradfield, Gladys. 1987. Scofield Town, Fiscal Year Ending June 30, 1986, Balance Sheet. Scofield Town Clerk. January.

(19) Bureau of Water Pollution Control Committee. 1984. South Weber Feasibility Report: Wastewater Loan and Credit Enhancement Program. Salt Lake City, Utah. January 10, 1984.

(20) Allen, Ray. 1989. Utah Municipalities, Supplemental Statement, Fiscal Year Ended June 30, 1988, South Weber City. Certified Public Accountant. February 4.

(21) Allen, Ray, Certified Public Accountant.1988. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1988 (With Accountants Report Therein). Salt Lake City, Utah. November 3.
-- 1987. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1987 (With Accountants Report Therein). Salt Lake City, Utah. December 12.
-- 1986. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1986. Salt Lake City, Utah. November 7.
-- 1985. City of South Weber, Annual Financial Report, Fiscal Year Ended June 30, 1985. Salt Lake City, Utah. December 11.

(22) Kennington, Ruth. 1989. Interview. Davis County, Utah Auditor. October 3.

(23) Mildon, Sherma. 1989. Interview. Uintah Town Clerk. August 3.

(24) Dahlquist, William A., Certified Public Accountant. 1989. Town of Uintah, June 30, 1988. Logan, Utah. February 24.
--1987. Town of Uintah, June 30, 1987. Logan, Utah. December 4.
--1986. Town of Uintah, June 30, 1986. Logan, Utah. December 24.

(25) Dabb, Delbert. 1989. Interview. Weber County, Utah Assessor. October 2.

Appendix C.

Figure C.1 on the subsequent page calculates community "ability to pay" using 3 project funding scenarios and the following formula:

$$A = P_0 \left[i\,(1 + i)^n / (1 + i)^n - 1 \right],$$

where A = annual loan payments;
P_0 = project loan amount;
i = interest rate (0, 5, and 10 percent were used in the scenarios);
and, n = years until loan maturity (i.e., 20 years).

For additional information regarding the exact calculations used in the MacIntosh Excel spreadsheet, see Figure C.1. Additonal information regarding the theory and notation used are found in:

Kleinfeld, Ira H. 1986. Engineering & Managerial Economics. New York: Holt, Rinehart and Winston, CBS College Publishing.

	A	B	C	D
1				
2			**Figure C.1.**	
3			**Formulas Used to Calculate Community**	**"Ability to Pay."**
4				
5				
6		Community Name:		
7		Community MHI, $:		
8		Project Cost, $:		
9		Number of EHUs:		
10		Hook-up Fee, $:		
11		Net Project Cost , $:	=C8-C9*C10	
12				
13				
14		Scenario #1	Scenario #2	Scenario #3
15				
16	Loan Amount, $	=C11	=C11	=C11
17				
18	Annual Interest Rate, %	0	5	10
19				
20	Amortization Period, years	20	20	20
21				
22	Monthly Payment per EHU, $	=B16/20/12/C9	=C12*(C14/12/100*(1+C14/12/100)^(C16*12))/	=D12*(D14/12/100*(1+D14/12/100)^(D16*12)),
23			((1+C14/12/100)^(C16*12)-1)/C5	((1+D14/12/100)^(D16*12)-1)/C5
24	Annual Payment per EHU, $	=B22*12	=C22*12	=D22*12
25				
26	Payment as % of MHI	=B24/C7*100	=C24/C7*100	=D24/C7*100