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THE CODORUS CREEK WASTEWATER MANAGEMENT STUDY. SUPPLEMENT TO AP--ETC(U)  
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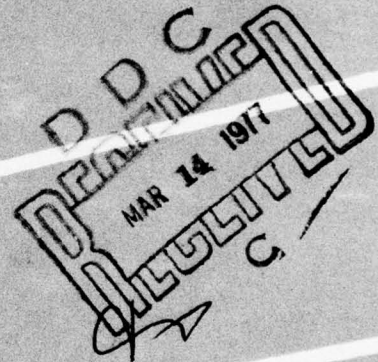
THE  
**Codorus  
Creek**

WASTEWATER MANAGEMENT STUDY

98  
AUGUST 1972



ADA 036859



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**Codorus  
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 WASTEWATER MANAGEMENT STUDY,  
 SUPPLEMENT TO APPENDIX C  
 IMPLEMENTING A LAND-BASED SYSTEM—  
 AN ANALYSIS OF APPROACHES.

⑪ Aug 72


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The purpose of this brochure is to provide some additional ideas to supplement Appendix C of the Codorus Creek Study Report, particularly with regard to implementing a land-based wastewater management system. Subsequent sections examine certain institutional, economic, and social factors pertinent to York County, and outline possible approaches to plan implementation and management intended to avoid serious disruption of existing community patterns.



## I. INTRODUCTION

On 1 September 1972, the U. S. Army Corps of Engineers released a Summary Report and Conclusions on a wastewater management study of the Codorus Creek Basin in York County, Pennsylvania. The Summary outlines a variety of ways to improve the water quality in Codorus Creek and its tributary streams through improved management of municipal and industrial wastewaters. Basically, however, two alternative approaches to treatment are involved. One would use plant-oriented technology and deliver the treated wastewaters to the flowing streams. The other would deliver treated water to rural watershed areas for application to the land by sprinkler-irrigation methods and after filtering through the soil layer, renovated water would be recovered by an underdrain system for addition to the flow in nearby streams or the groundwater supply, or for industrial use.

The soil, with its cover of plant life, is a natural system which can remove nutrients and other problem-causing ingredients from wastewater, particularly that which already has been treated to the secondary level before application. The land-spreading approach, in this case, makes use of the wastewater in two ways: it provides moisture for the growing plants, much as any supplemental irrigation system, and it supplies essential nutrients to enhance plant growth. Even though a land-spreading system for wastewater management can enhance land values and farm productivity, it also could result in significant changes in land use and land ownership unless careful thought is given to development and operation of the system. Such questions as the eventual ownership of the spreading lands and the benefits of land applications to the owner need detailed study to meet the desires and needs of the locality accepting the treated wastewater.

The "Basic All Land Plan" described in the Summary Report would involve, by the year 2000, a total of 16,900 acres of land, including lagoons and spreading areas. Of this total, about 11,700 acres would be spreading fields for wastewater irrigation. An alternative plan that would combine both the land-spreading and plant-oriented approaches was called the "December Plan" in the Summary Report. This plan would involve a much smaller area of about 3,900 acres by the year 2000, of which a little more than 1,800 acres would be spreading fields. Essentially, the "December Plan" substitutes a large advanced waste treatment plant near York for the largest of the land-based units of the "Basic All Land Plan."

The use of land-spreading methods for managing waterborne wastes is not new. In this country, however, the general pattern in recent decades has been to collect and treat wastewaters at specific plant sites, with discharge of the effluent to the waterways. As a result, the problems in implementing and managing such a system are not strikingly new. On the other hand, a land-spreading approach, even

though it may combine a number of familiar steps in the process, involves relatively new problems in implementing and managing a fully developed system. Of particular concern is acquiring the necessary rights to the use of lands, and fitting the system in with the social and political environment of a spreading area. The long-standing implementation approaches used for other types of public works may not work for land-based wastewater management systems where local community and cultural patterns are long-established or strongly valued.

## II. ALTERNATIVES FOR ACQUISITION AND MANAGEMENT

### General Discussion

Real estate requirements vary widely for the alternative wastewater management systems studied for the Codorus Creek Basin. In general, however, these requirements can be divided into two broad categories:

1. Lands which would serve as sites for treatment plants, pumping stations, and surface lagoons or reservoirs. These lands would be significantly and permanently altered from their present surface condition.

2. Lands for minimally disturbed or restored rights-of-way, buffer and environmental control areas, and spreading sites (in the case of land-based systems). These lands would be expected to remain in an essentially pastoral or natural condition over an extended period of time.

While exceptions can be expected, lands in the first category normally would be purchased in fee simple by the entity implementing the system. These lands and the structures thereon would presumably remain under the control of the entity responsible for operating the system. For the second category of lands, it should be sufficient to acquire more limited rights to the use of the land. Thus, it may be possible for the owner to continue using his land.

This second category is of special interest here, particularly with respect to the spreading sites required for irrigating with treated wastewater. These irrigation areas constitute the major item of land use in either the "Basic All Lands" or "December" plans outlined in the Codorus Creek Summary Report. A flexible approach in the manner of acquisition and management of these lands has the greatest potential for minimizing adverse social impacts of a land-based wastewater management system, while retaining the beneficial aspects of such a system.

To highlight the flexibility available, a general discussion covering four subject areas bearing on the acquisition and management of a land-based system follows. These areas are: the entity implementing the system, the means available for acquiring the rights to the desired land uses, the entity managing the system, and the on-land operator.

### Alternative Implementing Agencies

Implementation of a wastewater management system would normally be accomplished by some local or regional governmental entity, with the size of the system and the local law and political structure

influencing the range of available alternatives. As the regional scope of the system became larger, it is even conceivable that a State or Federal agency could initiate the system, although such an agency might not remain responsible for its continued operation. Given current Pennsylvania and Federal law, and the restricted (one-county) scope of a Codorus Creek Basin system, only those arrangements available to local governments are discussed here.

As a variation on the traditional theme of a governmental entity as the agency constructing and acquiring wastewater treatment facilities, the local government could contract with a private corporation for the development of a wastewater treatment system.

There are, then, four courses of action which local governments can pursue when implementing a land-based system.

1. Individual municipal action.
2. Joint municipal action.
3. Formation of a municipal authority to act for the municipality.
4. Contracting with a private corporation for development of the system.

While the first alternative, individual municipal (city, borough, and township) action, is possible insofar as the legal ability to so act is concerned, it would prevent integrated consideration of the basin's needs. Worse yet, such a course of action would be a step backward in the Codorus Creek Basin from the current conditions of subregionalization of treatment systems.

The second alternative may be accomplished pursuant to the Pennsylvania statutes which provide that cities of the third class (*i.e.*, York), boroughs, and townships (first and second class) may join together to implement waste treatment systems. Under this alternative, the concerned municipalities would form a joint sewer board whose members would consist of one representative from each of the participating municipalities. This board would have no power, however, to implement any system unless all participants concurred. Thus, while regionalization is possible under this alternative, it could be achieved only by extensive and time-consuming coordination with a concomitant burden on the municipalities' administrative workload.

The Municipalities Authorities Act of 1945, as amended, 53 P.S. §301 et seq., offers the vehicle for the third course of action. Any city, borough, or township can, on its own or jointly, form an authority. Additionally, the boroughs and townships in the basin could contract with an authority formed by the City of York. Such joint action to form an authority, or formation of an authority by the City of York with other municipalities contracting with that

city authority, still fails to achieve many of the desirable ends of regionalization. Any authority so formed would only have the legal ability to plan for and serve those jurisdictions participating in its organization or contracting with it for service. Thus, any number of municipalities in the basin could continue on their own individual courses of action, the result being fragmented control over the basin's water quality. This mode of action would also require extensive coordination.

The County of York could also form an authority and other municipalities could either join in the formation of or contract with that authority for services. While this authority would have the geographical jurisdiction necessary to provide central direction and control of a basin-wide wastewater system, it too would have limitations. In particular, an authority may not implement a project "which in whole or in part shall duplicate or compete with existing enterprises serving substantially the same purposes" (Act No. 92, June 1, 1972, §1, [1972] Penn. Laws 236). Thus, a county authority would apparently not be able to require a municipality to join in a regional system if that municipality had a wastewater treatment system which accomplished all that the regional system could offer. But if the municipality was violating state water quality standards, the county authority probably could require the municipality to join the authority's system so that properly treated wastewater could be obtained. The rationale which would support this action is that a regional system which provides superior treatment does not "duplicate or compete with" existing facilities since those facilities are incapable of providing the same service that the regional system would provide.

Essentially, the practical strength of any joint authority is limited by the willingness of municipalities to join in the effort. A spirit of reasonable cooperation could, however, provide substantial regional management benefits. It should be noted in this regard that once a municipality has joined an authority and the authority has incurred any obligations, a member municipality cannot withdraw from the authority without the authority's consent. Similarly, of course, any municipality entering into a contract with an authority would be bound by the terms of that contract.

The reluctance of some municipalities to submit to a basin-wide plan might still cause significant impairment of water quality. The Pennsylvania Department of Environmental Resources is in a position to provide leverage to bring these municipalities into the regional system pursuant to the Clean Streams Law, which specifies that it may order

municipalities to undertake studies, to prepare and submit plans, to acquire, construct, repair, alter, complete, extend, or operate a sewer system or treatment facility, or to negotiate with an authority for combined or joint sewer systems or treatment facilities. 35 P.S. §691.203(b) (Supp. 1972-73).

The alternatives discussed above take the traditional form of wastewater treatment services by a local governmental entity. A fourth alternative is to turn to a private corporation, just as gas, electric, and water services are often provided by private companies. Such a "public utility" would be subject to the Public Utility Law, as amended, 66 P.S. §1101, et seq., and the jurisdiction of the Public Utility Commission. The significant aspects of this alternative are the reduced governmental role in wastewater services and the impacts associated with an increasing ownership and managerial role for private industry.

#### Alternatives for Acquiring Rights to the Land

The public or private entity implementing a land-based wastewater management system has three general means of acquiring the right to use a specific tract of land for wastewater irrigation. These are:

1. Obtaining the site in fee.
2. Obtaining some real property interest other than fee (easement or leasehold) in the site.
3. Entering into a contractual agreement with the landowner, no interest in real property being acquired.

Fee simple. In this case, all rights to the land would be acquired by the implementing entity. In some agricultural areas, the implementing entity might find it necessary to acquire only croplands, allowing owners who so desire to retain homesites, buildings, and immediately adjacent lands. A key result of fee simple purchase, when title passed to a governmental entity, would be the removal of the lands from the real property tax rolls. At the same time, fee simple title would give the wastewater management entity the widest range of flexibility in using the lands for whatever public purposes may appear feasible over an extended period of time.

Less-than-fee interests. In this approach, title to the spreading sites would be retained by the current owner. The implementing entity would acquire sufficient less-than-fee real property interests, in the form of leases or easements, to carry out the particular management practices and controls required by the land-spreading system. Less-than-fee interests would reduce the impact on the local jurisdiction's real estate tax base, when a public entity is the implementing agency. Still, it would provide a real property interest that would run with the land should the owner pass the fee title on to other parties. While acquiring a less-than-fee interest may mean obtaining less-than-ideal control from a wastewater management viewpoint, the long-run cost of acquiring and maintaining those interests may equal or exceed the cost of acquiring fee title. However, the

social and political impacts of less-than-fee acquisition could be of overriding concern, particularly where a viable and productive rural community which wishes to remain essentially intact is involved.

#### Contractual Agreements Involving no Real Property Interests

This avenue would involve a contractual agreement between the implementing entity and the landowner. The specific terms of such an agreement are not important here since they would vary widely depending upon the particular management needs and the economics of irrigating crops with nutrient-rich wastewater. In general, however, the implementing entity would contract for the right to spread treated effluent upon the land, to enter upon the land as needed, and to prescribe those farming practices necessary for proper site management. The owner would receive, in return, an agreed-upon compensation. The only limit on the terms of such a contract would be the ability of the parties to negotiate creative, flexible, and mutually satisfactory conditions. While this approach would leave the landowner with the maximum real property interest in his land, it would also make the task of managing the system more difficult, and could increase the long-range annual cost of operation. Again, the local social, community, and political structure may warrant such an approach since it would tend to support rather than weaken a community.

One requirement of a land-based wastewater system which is of particular concern with respect to this alternative is the need to guarantee that the spreading site will remain available on a relatively long-term basis. A contract would create no interest in real property and could not prevent the transfer of the land to another party who did not wish to enter into a contract. The subsequent owner might be unwilling to allow his land to be used as a spreading site. Given the projected life of the project, and thus the very likely possibility of change in ownership, a solution might be purchase by the implementing agency of an option to buy the land in the event the owner or his heirs wished to sell. This would afford one means of keeping the spreading site available, but would alter the basis of right to use of the lands at some future point in time.

#### Alternative Managing Agencies

In most cases, the implementing entity for a newly installed land-based wastewater treatment system would be the logical agency for managing the system, once the system became operational. But the management characteristics of the system, its regional extent, and the different nature of the construction and land acquisition phase, as compared to the day-to-day operational phase, may warrant a change in the institutional arrangement.

From a general standpoint, the same alternative categories of managing agencies exist as for the implementing entities. A local governmental entity would be one approach to system management. The range of choices is wide enough to accommodate almost any conceivable wastewater management system. In the case where a municipal authority implemented the system, it could either operate it itself, or contract with a private party to operate the system. The authority could even sell the system to a private corporation, in which case the corporation would be a "public utility" subject to the Public Utility Law. Also, if a public utility implemented the system in the first place, one would expect that corporation to manage it. The salient difference between operation of the system by a governmental entity and by a private party is the fact that in the former case a governmental bureaucracy would be required, whereas in the latter case, private industry would provide the necessary managerial organization.

#### Alternative On-Land Operators

The subject of the on-land operator presents no less variety of alternatives than do the above subjects. The questions here are who actually works on the land, using whose equipment, and what is his relationship to the entity that holds rights to irrigate the land.

Where a spreading site is obtained in fee, a former owner could remain to work what had been his own farmlands. His relationship to the entity owning or managing the land could range from that of an employee, to that of being a tenant by the leasing of his former lands back to him. The lease arrangement would afford a former owner the greatest stake in the operation. He would own a real property interest (the leasehold estate) and the crops would belong to him, thus making him the bearer of the usual risks of failure and the beneficiary of the fruits of labor. An intermediate device is that of owner-share-cropper. This arrangement more nearly approximates for the farmer the position of an employee, the main difference being that the cropper may be using his own farm machinery and receiving a share of the crop, rather than a flat salary. Under the employee or "hired-hand" arrangement, the farmer would bear no risk of failure relative to the land-spreading operation, nor would he share in any of the crop revenues or benefits. However, he would be guaranteed a steady income, and if he were using his own farm machinery, an additional "rental" fee.

When a less-than-fee interest is obtained, another alternative is available. The owner-landlord under a lease could agree, pursuant to the terms of the lease, to continue farming his lands. In the case where easements are obtained, there would be a need for a managing contract with the owner which specifies the practices the farmer would have to follow, just as the covenants in the lease would specify the same positive duties.

Finally, where the rights to the use of the land are obtained solely by contract, that same instrument could serve as a management agreement with the farmer. Again, this contract would specify the minimum practices and services required of the farmer.

In each of the above alternatives, excluding the one where the worker of the land is an employee, the compensation arrangement will depend largely upon the value of the wastewater as a source of nutrients and supplemental irrigation water, and the price which the farmer puts upon the partial relinquishment of his managerial rights. It could well be that even if crop yields are increased, a cash payment will be needed to convince the farmer to enter into the system. On the other hand, if crop yields increase substantially, a point might be reached at which the farmer would be willing to pay the managing entity for delivering enriched water to him.

### III. A POTENTIAL SPREADING AREA - AN ANALYSIS

This section examines some of the principle economic, political and social characteristics pertinent to a study of land-spreading alternatives in York County, and more specifically in Census Tract 217 which includes a potential major spreading area. The Summary Report identifies this area after analysis of land slopes, soil types, and geologic characteristics of a number of potential areas in the Codorus Creek Basin.

#### York County

In recent years there has been a general decline in York County in the number of operating farms and the total acreage in farms. At the same time there has been a slight increase in the average size of a farm as Table 1 indicates.

TABLE 1

Size and Number of Farms in  
York County

	<u>1964</u>	<u>1969</u>	<u>% Change</u>
Number of farms	3,816	2,978	- 22%
Acres in farms	383,035	325,330	- 15%
Average size of farms	100.4	109.2	+ 8%

Source: 1969 Census of Agriculture - York County Data

At the same time that there has been a decrease in the number of farms, Table 2 shows there has also been a greater decrease in the number of smaller farms up to the 259-acre size, while the number of larger farms remains constant over the five-year period. These figures would lead one to conclude that generally there has been a trend in York County away from smaller farms and toward larger farms, as the "acres in farms" for these categories show.

TABLE 2

Farms, Land in Farms, by Size of Farm

	<u>1964</u>		<u>1969</u>	
	<u>Number</u>	<u>Acres in Farms</u>	<u>Number</u>	<u>Acres in Farms</u>
All Farms	3,816	383,035	2,978	325,330
Farms with -				
1 - 9 Acres	238	1,032	165	610
10 - 49 Acres	1,198	33,676	854	25,501
50 - 69 Acres	457	26,508	357	20,753
70 - 99 Acres	543	45,216	453	37,492
100 - 139 Acres	571	66,718	436	50,533
140 - 179 Acres	297	46,480	243	38,228
180 - 219 Acres	158	31,138	129	25,515
220 - 259 Acres	125	29,661	110	26,118
260 - 499 Acres	183	61,252	183	62,357
500 - 999 Acres	36	23,663	38	23,174
1,000 - 1,999 Acres	9	-	9	-
2,000 - Acres and over	1	-	1	-

Source: 1969 Census of Agriculture - York County Data

The implications behind the figures indicate that for the York County farming community it is becoming increasingly difficult to maintain their social and economic viability and strength as individual farmers. Table 3 shows a decrease in all operator categories and while these figures have to be looked at in light of the total number of farms for each year, it can be assumed that full ownership status is getting more and more difficult to maintain.

TABLE 3

Farms and land in farms operated by:

	<u>1964</u>	<u>1969</u>
Full owners	2,757	2,140
Part owners	690	571
Tenants	351	267
On-farm operated	3,507	2,284
Not on-farm operated	(-)	429

Source: 1969 Census of Agriculture - York County Data

Equally disconcerting is the decrease in the number of operators in the 25-34 year old category in Table 4. The increase of 25-year-old-and-under operators is difficult to interpret in light of the apparent movement of the young off of the farms.

TABLE 4

Farm operators by age group

	<u>1964</u>	<u>1969</u>
Under 25 years	47	70
25 - 34 years	404	334
35 - 44 years	832	638
45 - 54 years	997	824
55 - 64	812	632
65 and over	724	480
Average age	51.3	50.1

Source: 1969 Census of Agriculture - York County Data

These developments are reflected in the economic situation of the York County farmers. Table 5 shows a projected decrease in both farm earnings and farm employment. These decreases are especially significant in light of the increases in total earnings and employment.

TABLE 5

	<u>1968</u>	<u>1970</u>	<u>1975</u>
Total Earnings	\$764,908		\$1,318,674
Farm Earnings	<u>13,743</u>		<u>13,582</u>
% of total	1.8%		1.0%
Total Employment		153,100	161,339
Farm Employment		5,700	3,496
% of total		3.7%	2.2%

Source: York County Industrial Series - M-5-70

Despite these trends, there still seems to be a persistent desire on the part of the farmers in York County to maintain their autonomy and individuality. Table 6 points to this fact quite graphically if we look at the large number of individual farm organizations.

TABLE 6

Farms by type of organization

	<u>1969</u>
Individual	1,508
Partnership	194
Corporation (including family owned)	27
10 or fewer shareholders	25
More than 10 shareholders	2

Source: 1969 Census of Agriculture - County Data

These economically and socially weakening trends have been experienced in other rural American farming communities and are reflections of a more deep-seated sociological process, which is having adverse effects on the individual farmer's ability to make a decent living through farming efforts alone. This situation is equally evident in the major potential land-spreading area in York County, Census tract 217. As such, it has major implications for the prospects of land-spreading in this area.

#### Census Tract 217

Census Tract 217 contains some of the highest potential land areas in the Codorus Creek Basin for irrigation of treated wastewaters. Included are North Codorus and Heidelberg Townships, and the Boroughs of Seven Valleys, Jefferson, Spring Grove, and New Salem. The tract has an areas of 48 square miles (17% of the Codorus Creek Basin) and a population of 9,580 (5% of the basin). The area stretches roughly from the intersection of the South Branch of Codorus Creek with the main branch, southwest along the main branch, to its intersection with Oil Creek. The data and observations presented here are the result of information gathered through meetings with concerned local officials and official publications.

Generally, what was said earlier about the farming situation in York County as a whole can also be said about Tract 217. Farmers are finding it more and more difficult to make a living just on the basis of their individual farming efforts. They are leasing out fields, getting secondary jobs, changing ownership patterns, and generally looking elsewhere for a livelihood. These situations are seen in Table 7, especially in the labor force and income characteristics sections.

Existing along with this pattern is a strong desire on the part of the farming population to maintain their rural, low-density, small-farming type of existence. The strength of these feelings is perhaps most graphically illustrated in light of two recent occurrences in Tract 217. The first is an experience with large corporate farming enterprises moving into an area, buying up large tracts of land, farming them intensively and indiscriminately for several years, and then moving on to another area. The feelings against this kind of operation are understandably quite strong. Corporate operations, however, which add something of permanent value to the community are not seen in this negative light.

The second development to which it is reported farmers in this tract are also opposed are attempts by both private and public consultants to set up zoning ordinances. As can be seen again from Table 7, most of the Townships and Boroughs in Tract 217 do not have zoning. It appears that the farmers are opposed primarily because they are afraid that zoning will further open up the area to developers, who present the most serious current challenge to the local farmers' style of life. It is also because of this threat that some farmers may seem ready to favor a stabilizing land-spreading system of waste disposal over an advanced sewage treatment plan.

The farmers in this area, due to a lack of modern amenities and facilities, have a problem with waste disposal that is directly related to the current polluted state of Codorus Creek. It seems to be the feeling of many farmers that if an advanced sewage treatment facility were built in the area, this additional economic infrastructure facility would attract developers to this section of the county. The basis for these feelings is not that the land-spreading alternative could not handle the same waste load as an advanced treatment system. Rather, land-spreading requires large tracts of open farm and forest land, and thereby reduces the possibility that developers would be able to come into the area. Once the farm lands are developed the facility for handling large quantities of irrigation water is gone.

It appears that local farmers connect the likelihood of their maintaining a rural low density kind of life, while solving their waste disposal-pollution-problems, to the land-spreading process. It also seems that they have the best chance of obtaining these goals through the land-spreading alternative, recognizing that there are existing concerns on their part over the technical feasibility of the idea and the different legal options through which land spreading could be carried out.

For them fee simple purchase would appear to represent the least attractive alternative, while the others, leases, easements, and contracts, would be considered viable options. These same sentiments also seem to hold true for the local Township officials, although for different reasons. They are reluctant to lose any more of their real estate and income tax base. They are quite heavily dependent on real estate taxes for their operating expenses as Table 8 indicates in part. They have already lost part of their tax base through past public land-use acquisitions of various sorts.

In addition to the above mentioned benefits which land-spreading could represent to the farming community of this tract, there are a number of other advantages which farmers in the area currently practicing land-spreading have observed: (1) wastewater is being used and recycled through land filtering while reducing the pollution level but increasing the flow levels of the surrounding streams; (2) nutrient levels of the soils are increased which in turn is causing (3) an increase in crop production both in quantity and quality and (4) secondary beneficial side effects on the health of livestock, and finally (5) a general increase in the economic strength of the farm due to greater returns on crops and a cut-back on certain expenses, such as for fertilizer and chemical sprays.

**Table 7:** Census Tract 217: Includes the following townships and boroughs

Township	Area (Sq. Miles)	Population	Assessment Total (20% of Market Value)		Farm % of Total	Zoning Ordinance
			Farms	Total		
North Codorus	31.4	4,514	1,432,000	5,680,000	25	No
Heidelberg	14.5	1,785	659,000	2,158,000	31	Yes
<u>Borough</u>						
Seven Valleys	1.1	688	37,000	461,000	8	No
Jefferson	0.5	540	32,000	611,000	5.2	No
Spring Grove	0.5	1,669	56,000	3,816,000	1.4	Yes
New Salem	0.3	384	28,000	455,000	6.2	No
Totals	48.30	9,580	2,244,000	13,181,000		

Income Characteristics of Tract 217

Mean Income	1969	11,213	1960	Total Employed, 16 years and older	3,338
Median Income	9,870	Heidelberg 5,849	Farm workers	109	
		North Codorus 5,641	% of total	3.3%	
		Spring Grove 6,458			

Type of income in 1969 of families: All families  
 With wages or salary income - number of 2,115  
 Mean wage or salary income 1,976  
 With farm self-employment income - number of \$ 10,287  
 Mean farm self-employment income \$ 158  
 \$ 2,603

Source: Census Tracts, York, Pa. (PHC(1)-237  
 1970 Census of Population and Housing

Table 8:

North Codorus Township Financial Data (1964-1972)

<u>Revenue Receipts:</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
<u>Taxes</u>	20,383	26,046	30,495	36,709	51,724*	52,300	55,000	59,000	68,300
Real Estate	15,114	15,924	16,232	22,257	35,816	36,550	38,300	40,300	42,500
Per Capita	5,269	10,122	10,503	11,156	11,574	11,750	11,700	13,500	15,000
Real Estate Transfer	-	-	3,760	3,296	4,334	4,000	5,000	5,200	10,800
<u>Government Expenditures:</u>									
Total Gov't Expnds	18,543	17,868	32,952	42,894	70,314	51,410	58,480	58,200	63,900
Health & Sanitation	-	-	200	-	731	850	1,400	800	900

\* Above average increase due to increase in real estate tax rate from 8.0 to 12.0 mills.

Source: Consultant's Estimate, 1970 North Codorus Township Annual Budget.  
1964-1968 North Codorus Annual Financial Reports.

#### IV. POTENTIAL MANAGEMENT CONCEPTS

Given the present rural character of the potential major spreading areas, a number of possible approaches to setting up and operating a land-based, wastewater management system can be outlined. These "sample" concepts demonstrate the flexibility open to local governmental officials should they decide to use a land-based wastewater system for all or part of the Codorus Creek Basin. A number of often forgotten goals underlie the "sample" approaches, perhaps with some compromise of other goals, such as a high degree of management control of the wastewater system, or the greatest income return to the managing agency. These goals, simply stated, are:

1. Minimize the relocation of people from their homes and lands.
2. Maintain or improve the local (Township) tax base,
3. Stabilize rural community values in the spreading areas.
4. Increase on-farm income by land spreading.

#### Implementing Agency

Wastewater management can be accomplished at various levels of local government under Pennsylvania law as outlined in Section II. The jurisdiction of the implementing agency would depend on many factors, both tangible and intangible, but a local government is reluctant to surrender its power and authority without some corresponding benefit or advantage. These incentives may be in the form of economies of scale, solution to or removal of a difficult local burden, or even a way to forestall unwanted development in rural areas. In the absence of some incentive, real or imagined, tangible or intangible, there is little that realistically can be done to coerce or compel a local entity to join or form a broader authority.

The various basin-wide plans lend themselves well to county-wide, basin-wide, sub-basin, or local implementation. A county-wide or basin-wide wastewater agency could ensure adequate treatment throughout the basin by limiting or precluding the possibility that a single locality's treatment effort would damage the efforts of the other entities. The regional entity would be able, as well, to establish consistent treatment policies, afford better qualified personnel, effect economies of scale and lower service charges, obtain better financing, and remove the burden of owning and operating separate plants by each local government. On the basis of these apparent benefits, a basin-wide or county-wide entity appears to be preferable to implement the regional land-based plans developed in the Codorus Creek Wastewater Study. The local governments must, however, decide on their own whether they desire to form such an entity to implement a regional system, with powers to:

1. Receive, own, lease, and dispose of both real and personal property.

2. Exercise eminent domain for the authority or its member entities.
3. Sue and be sued.
4. Finance investments and require payment for services provided.

#### Acquiring Land Rights

The potential spreading areas of North Codorus and Heidelberg Townships represent a significant portion of the better soils in the two Townships. Given the goals listed earlier in this section, the implementing entity would need to acquire fee title only to those lands immediately required for treatment lagoons, storage lakes, pumping stations, etc. The rights to all other lands used could be acquired, at least initially, by lease or easement, permitting the present residents to retain their homes and landowners the title to their lands. This approach would least disturb the tax base for local governments and result in the minimum number of household relocations. Rights-of-way for pipelines could be obtained by easements, as could access roads to the spreading areas.

Since the farm fields to be used for the irrigation of the treated wastewaters would be the greater part of the total land-use needs of a land-based system, most rights to land use would be acquired by lease from the existing owners. The lands would remain in private ownership, in agriculture, and on the tax rolls of the local government. The owner would receive payment for the lease depending on the nature of the lease itself, the extent to which the owner participates directly in working the lands, and the owner's share in any increased crop revenues. There are a number of options to carry out this approach, as outlined on the following pages.

#### Sample Concepts for Managing the Operation

Assuming that a regional entity is established to implement a land-based wastewater management system, and that maximum use will be made of leases and easements to acquire land-use rights in order to protect rural community values, at least three "sample" concepts for managing the system can be outlined. The first sample emphasizes direct entity-to-farmer relationships. The second concept uses a private company or corporation to act as a system manager for the entity, working with individual farmers or their representatives. The third possible concept discusses direct management of the entire system by the entity or its agent.

Sample Concept I - A Regional Entity Deals with the Farmer. The regional entity would manage the overall treatment system, convey the treated wastewater to a farmer's fields, and the farmer would irrigate a crop in accordance with a lease agreement with the entity which would permit the farmer to market the crops. If the landowning farmer did not

desire to operate the on-farm system himself, he could retain his homestead and the entity could contract with an operator, possibly a neighboring farmer. If the farmer is a tenant, the entity could arrange with him to irrigate and crop under a similar arrangement as with an owner.

The regional entity, depending on local interest, could give the landowning farmer an option in constructing the on-farm irrigation, collection, and renovated water return facilities. If the entity constructs these facilities on the owner's land, it would be similar to a telephone company, which owns the equipment and charges for its use. If instead, the farmer or other party constructs the irrigation and collection system, the entity's situation would be similar to that of an electric, gas, or water company in providing a service to the property limits.

A "party" is used above to include, other than the individual farmer, a corporation or cooperative representing some or all farmers in the spreading areas. A cooperative, as a variation of this "sample" concept, could generally act for the farm operators in dealing with the entity to allocate amounts of wastewater to individual members, further enrich or balance the nutrient content of the irrigation water to the particular crop needs, and collect and market the crops. The cooperative could, as well, help individual farmers finance investments in irrigation equipment if this approach proved to be more acceptable than construction of the on-farm irrigation system by the entity. The direct lease and contract arrangement between the entity and individual farmer would indicate an early stage of a land-based system development under this concept. As the system grew, and supplemental irrigation of wastewater became better understood, a farmers' cooperative (or corporation) could replace individual leases and contracts, and represent the farmers' combined interests with the entity and in marketing arrangements.

Sample Concept II - A Regional Entity Acts Through a Private Corporation. Under this "sample" concept, a regional entity would be strictly an overall management agency for local governments. The operational features would be contracted out to a private individual, partnership, company or corporation. The entity staff would remain small and specialized, and only an overview and inspection of the contractor's efforts would be required to determine if he has, in fact, accomplished the desired renovation of the wastewater, while at the same time serving a broader public interest. This sample concept would be compatible with a farmers' cooperative, or some other organization which would contract for the individual farmers, so that few if any farmers alone would have to deal directly with a corporation to receive treated and enriched irrigation waters. For the entity, this concept minimizes the bureaucracy necessary to run a regional wastewater treatment system, substituting instead, an element of private enterprise to serve the important operational role on a day-to-day basis. However, the public entity might still prefer to carry out itself, or by separate contract, much of the land-rights acquisition and construction of the land-based treatment system before calling in private management.

**Sample Concept III - A Regional Entity Manages the Entire System.**

This concept requires an entity to manage all phases of the operation, including finance, personnel, engineering, operation, and maintenance. The regional entity must acquire the right, by leases, easements, or fee simple acquisition, to use of the necessary lands, place the irrigation and underdrain systems on each farm, see to the irrigation and cropping, and capture the renovated water for reuse. The entity would, in short, have to ensure operation on each farm, requiring a large staff or contract labor. This sample concept provides the most control on the treatment process of the three "samples" outlined.

This concept would still leave the spreading fields in private ownership, but the individual farmer would not be working his fields for his own direct benefit, but as an "employee" of the entity. At the same time, the employee would be receiving a wage income not related to market conditions for a crop. The entity bears the full burden of directing all day-to-day operations, including the application of wastewater and cultivation and harvesting of crops, much as it would if it actually "owned" the spreading sites.

## V. SUMMARY CONCLUSION

If local jurisdictions in and near the Codorus Creek Basin in York County, Pennsylvania, wish to explore further the alternatives for land application of treated wastewaters, they have available a number of possible approaches that avoid public takeover of farm lands and disruption of rural communities. The result of a carefully planned and implemented management approach could be to strengthen and stabilize rural community values, working to counter present trends toward a weakening agricultural base and on-farm income.

None of the approaches noted in this brochure need be followed as outlined. They are intended to illustrate the range of choice available. Further study of local conditions and desires would be needed to indicate preferred approaches and time schedules, and could well result in a "mix" of the ideas presented here. Even if some degree of land-spreading is not considered for adoption, the local jurisdictions must still face solution of water quality and related problems on a regional basis. The same degree of study and care should go into the selection of a mechanism for carrying out wastewater management on a long term and a day-to-day basis, keeping in mind that wastewater is but one of the area's public service problems. Solution to the wastewater management problem could be made compatible with solution to the management of other wastes, with overall efficiency and savings in governmental cost at the local level.

An overriding consideration here is that local citizens indicate the goals, other than a high degree of wastewater treatment, that they deem important. Their decisions will point to the appropriate management concept for the Codorus Creek Basin and York County.