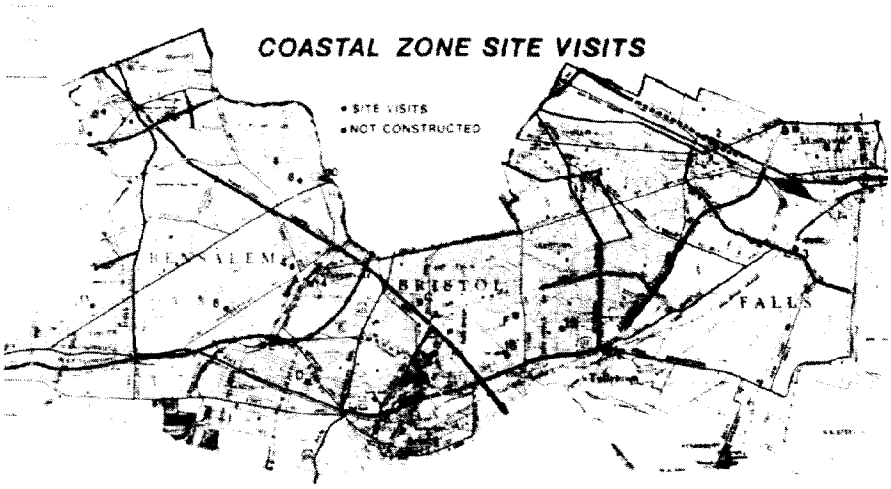
AN ANALYSIS OF SOIL EROSION, SEDIMENTATION AND STORMWATER CONTROL IN COASTAL COMMUNITIES, -- BUCKS COUNTY, PENNSYLVANIA



PREPARED BY:

BUCKS COUNTY CONSERVATION DISTRICT

IN COOPERATION WITH:

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF SOIL AND WATER CONSERVATION
COASTAL ZONE MANAGEMENT OFFICE

JUNE 1981

Coastal Zone
Dept. of Environmental Resources
Office of Resources Management
Coastal Zone Management Office

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CHARTS AND GRAPHS

FORWARD

Having reviewed the Zoning and Subdivision and Land Development Ordinances for each of the municipalities within the Coastal Zone of Bucks County, the Conservation District Staff opinion is that the existing ordinances and codes are basically adequate to provide for adequate erosion, sedimentation and stormwater control. Rules and regulations do not control erosion, sedimentation, or stormwater problems however. Therefore, the primary concern of the Conservation District is to see that the implementation of accepted erosion, sedimentation and stormwater practices takes place in cooperation with local governments, according to their existing ordinances and codes.

Suggestions as to how implementation or compliance may be improved have been made and it has also been suggested that when voluntary compliance is ineffective, enforcement action be taken in the form of induced compliance.

Population pressures and industrial activities probably exert the greatest effect on land use; however, local governments should take advantage of local, county, and regional planning commission decisions as well as setting aside of recreational lands to offset the negative aspects of development.

Water quantity and quality and the need for water conservation have been addressed in somewhat general terms, with suggestions being offered to improve water quality and quantity within the area.

Benefits derived by the District as a result of the study are also briefly summarized, as are the recommendations which the District anticipates will have the most positive effect on the estuary.

The District has accumulated a great deal of supporting information in the study process and in the staff's opinion, this supporting information is probably the most significant information presented in the report. We hope that the municipalities will pay close attention to the conclusions and recommendations resulting from the study, and that these have a positive effect on erosion, sedimentation and stormwater management of the Coastal Zone as well as land use and related activities.

To assist the municipalities with the implementation of the conclusions and recommendations, the District staff plans to meet with the municipal officials to present the completed report, and to review the findings. In addition, workshops and tours will be scheduled to emphasize and correct problems cited by the study.

INTRODUCTION

The Coastal Zone Management Act of 1972 (Public Law 92-583), amended 1976, established a program within the United States Department of Commerce to assist states with land use management and the handling of the demands on the waters surrounding the nation's coast. "A key intent of the Act is management of those near shore activities which have a direct and significant impact on coastal waters."*

Conservation District participation in the Coastal Zone Management program reaffirms local authority over land and water in the Coastal Zone and places emphasis on state and local leadership for the implementation of the Coastal Zone Management Act activities.

Coastal Zone Management programs within the states are voluntary,* and the information which follows will briefly introduce the procedure by which the Bucks County Conservation District became involved with their Coastal Zone Management Study.

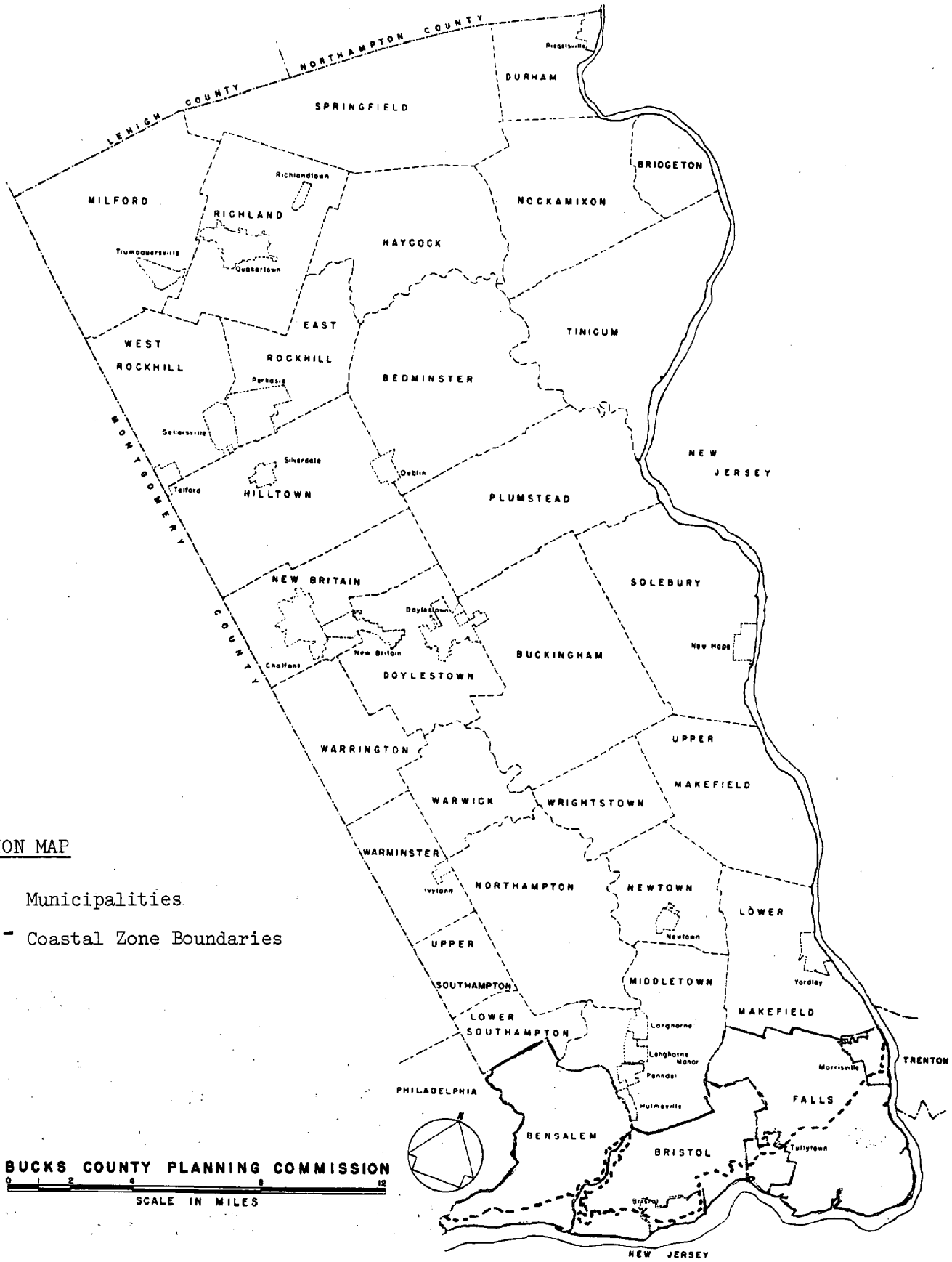
At the September 5, 1980 meeting of the Bucks County Conservation District Board of Directors, the Pennsylvania Department of Environmental Resources, Bureau of Soil and Water Conservation, gave an overview of the federal Coastal Zone Management Program and how it relates to Pennsylvania and the Delaware Estuary. Municipalities involved in Bucks County include Bristol Township, Bensalem Township, Falls Township, Bristol Borough, Morrisville Borough and Tullytown Borough. The purpose, as explained, was to assess and analyze erosion and sediment control requirements of the previously mentioned municipalities, to determine how these requirements are administered and to make recommendations as to how the requirements might be improved. Upon action by the Directors, approval was given to make application for the Coastal Zone Management grant. The District Chairman appointed a committee consisting of 3 directors to study the proposal and keep abreast of progress. The District Conservationist offered United States Department of Agriculture, Soil Conservation Service, assistance should it become necessary.

At the December Board meeting, a Bureau of Soil and Water Conservation representative was present to answer questions about the contract. The District entered into agreement with the Department of Environmental Resources, Commonwealth of Pennsylvania, to carry out the scope of work for the study. Developing and excuting the contract delayed commencement of the work program.

Actual work was begun February 6, 1981 at which time the Department of Environmental Resources, the District employees and the Committee met to set the course for the study and develop procedure.

*See Reference 1

FIGURE 1


NORTHAMPTON COUNTY
LEHIGH COUNTY
MONTGOMERY COUNTY
DURHAM
SPRINGFIELD
BRIDGETON
NOCKAMIXON
MILFORD
RICHLAND
HAYCOCK
TINICUM
EAST ROCKHILL
WEST ROCKHILL
BEDMINSTER
NEW JERSEY
HILLTOWN
PLUMSTEAD
NEW BRITAIN
SOLEBURY
BUCKINGHAM
DOYLESTOWN
WARRINGTON
UPPER MAKEFIELD
WARWICK
WRIGHTSTOWN
WARMINSTER
NORTHAMPTON
NEWTOWN
LOWER
UPPER SOUTHAMPTON
MIDDLETOWN
MAKEFIELD
LOWER SOUTHAMPTON
TRENTON
FALLS
PHILADELPHIA
BENSALEM
BRISTOL
NEW JERSEY
LOCATION MAP
Municipalities
Coastal Zone Boundaries
BUCKS COUNTY PLANNING COMMISSION
0 1 2 4 8 12
SCALE IN MILES

PURPOSE

Inasmuch as the Pennsylvania Department of Environmental Resources is responsible for erosion and sedimentation control within the Commonwealth of Pennsylvania and inasmuch as the Department of Environmental Resources prefers enforcement, interpretation, and problem assessment to be handled on the local level, the Bucks County Conservation District agreed to perform a study of the Coastal Zone Management Area of Bucks County for the Department.

Terms of the agreement were such that the Conservation District would assess the regulatory mechanisms for erosion and sediment control at the local government level in the Bucks County Coastal Zone as part of the implementation of the Pennsylvania Coastal Zone Management Program.

Since land use plays an integral part in erosion and sedimentation control, the District was also asked to look at current land use, discern possible future trends and make suggestions and recommendations as to how the regulatory processes on land use might provide for more efficient and effective erosion and sedimentation control.

Photographs by Paul B. Moyer

STUDY PROCEDURES

Copies of local zoning ordinances, subdivision and land development ordinances and the BOCA* code were the primary sources of information for the study of the Bucks County Coastal Zone Management Area. Initially these materials were obtained from the Bucks County Planning Commission, then by personal visits to each of the municipal offices.

Six lower Bucks County municipalities were surveyed** to determine aspects of the erosion, sedimentation and surface water control processes on the local level. Land use was to be reviewed and correlated to present and future activities as they might affect erosion and sedimentation control.

Local zoning maps, informational maps provided by the Bucks County Planning Commission and the Bureau of Soil and Water Conservation provided information relative to land area, populations and current and proposed uses. Soil maps*** provided a detailed soils breakdown of the area. Numerous charts and graphs were developed in the process and these are presented as supporting information to the written report and included in the appendices.

A key word search**** provided the means for the actual review of the Zoning Ordinances, Subdivision and Land Development Ordinances and related codes. Each municipality's ordinances were reviewed by three individuals, independent of the other for the sake of verification. This procedure involves selecting a series of words which are felt to be relevant to the subjects at hand, then going through each ordinance and highlighting these words as they appear in the ordinance or code. When complete, the search provides data relevant to the completeness of ordinances and codes, and provides insight into those areas not specifically addressed which the District staff felt were important to enhance the implementation of approved erosion and sedimentation control plans.

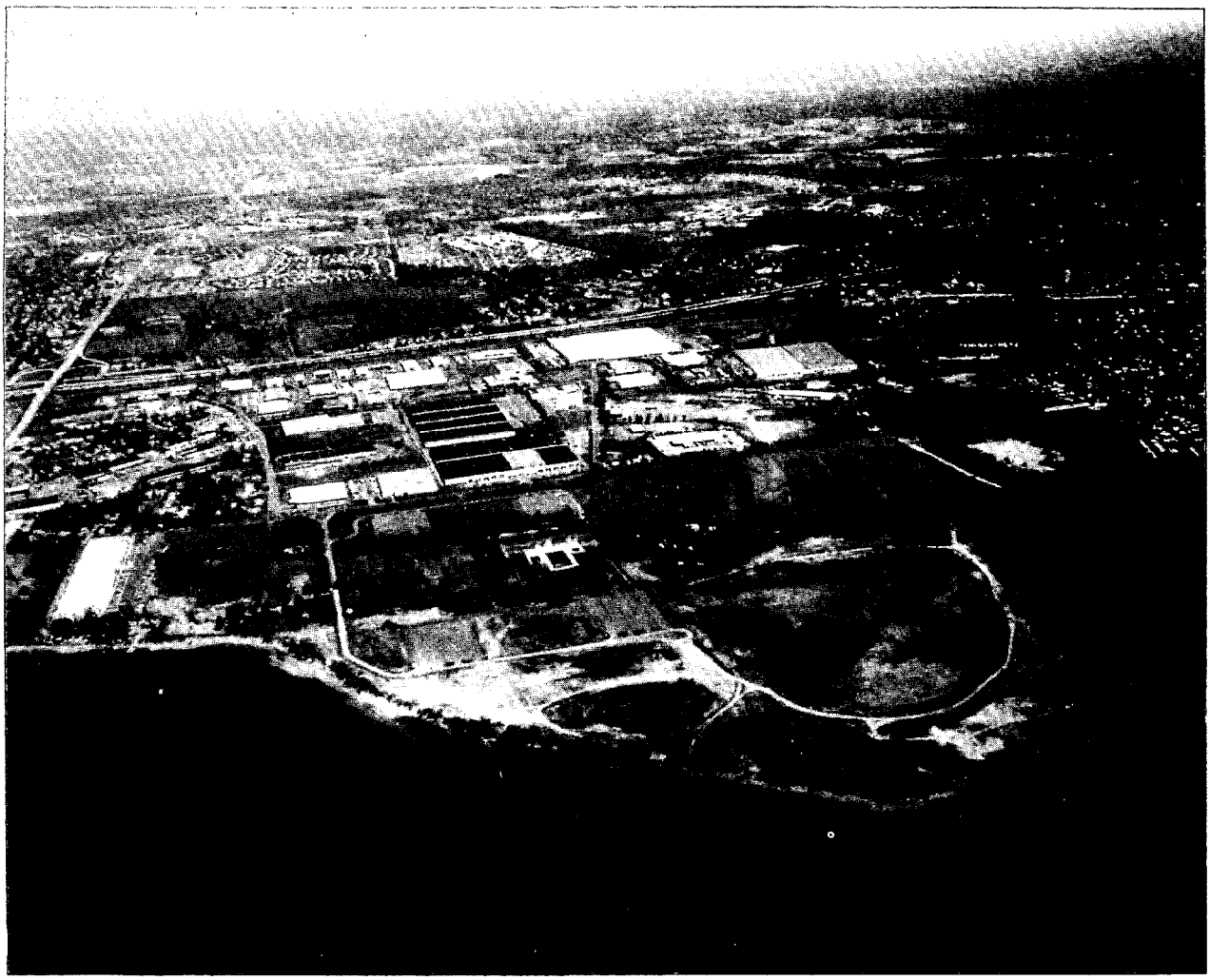
In studying land uses, areas were measured by the use of a planimeter. Unless otherwise referenced, that is the method which was used. Zoning maps provided much of the information relative to land use.

Various overlays were prepared to assist in the presentation of the information to the municipal officials and others affected by the study. Soil survey***** maps provided soils descriptions and information relative to land capability classes. Localized photography was done in association with site visits to determine the construction stage of a subdivision or development, adequacy of planned erosion and sedimentation control methods, adequacy of stormwater control measures, presence of any erosion and sedimentation control problems. Where problems existed, were the problems slight, moderate or severe and were there any violation notices issued (re Chapter 102, Pennsylvania Clean Streams Law) by the Bucks County Health Department.******

*BOCA - Building Officials & Code Administrators International, Inc.
**See Figure 1
***United States Department of Agriculture, Soil Conservation Service
****See Appendix A
*****See Reference 2
******See Appendix E

A letter to each municipality requested that they summarize their enforcement procedures in writing, complete a questionnaire and return this information to the Conservation District. A sample letter is included in Appendix C.

Field checks, carried out by the District Staff, consisted of specific site visits, localized photography and a written report of the visit. These field checks indicated that incidents of serious erosion do exist within the Coastal Zone Management Area. Sites with gully erosion (gullies of 2.5' depth) were encountered. A chart listing the results of the site visits is summarized in Appendix E.



Photographs by Paul B. Moyer

RESULTS AND DISCUSSION

As a result of interviews with municipal officials, we have determined that the earth moving and construction phases for subdivisions and land developments are monitored by the Township Engineer (or his designated agent), the local zoning officer, or building inspector. Citizen complaints with regard to erosion, sedimentation, and stormwater management are also handled by the municipal engineer, zoning officer or building inspector. In Bensalem Township, citizen complaints are handled as an office procedure (service request) which is brought before the Township Board of Supervisors. With respect to erosion and sedimentation problems, the Bensalem Township engineer would ideally like to see problems of this nature rectified prior to the stabilization and occupation of dwellings; however, occasionally erosion and sedimentation complaints do occur.

Enforcement procedures, where and when they become necessary, are handled according to information supplied by the municipalities and presented in Appendix C. Prior to October 1980, the Bucks County Health Department served as the enforcing agent for the Bureau of Water Quality Management, Pennsylvania Department of Environmental Resources. Subsequent to October 1980, the responsibility for enforcement of the Clean Streams Law (Chapter 102, Title 25) was transferred to the Bureau of Soil and Water Conservation, Pennsylvania Department of Environmental Resources. Violation notices issued by the Bucks County Health Department, acting as an agent for the Pennsylvania Department of Environmental Resources, in the years 1978, 1979 and 1980 are significantly low. Three violation notices were issued for the Coastal Zone; copies of these are presented in Appendix E of this report.

A questionnaire survey of the Coastal Zone Management municipalities provided the District and the local Soil Conservation Service office with data relative to the status of existing and proposed developments within the municipalities. This survey, as well as information gathered while interviewing municipal contact persons, indicates that development in the three boroughs is very limited, while development in the three townships is on a much larger scale. For the years 1978, 1979 and 1980 the Conservation District received and reviewed 74 erosion and sedimentation control plans encompassing 1004 acres* within the six municipalities. Of this total, 989 acres were in the three townships and only 15 acres occurred in the boroughs.

In studying land use for the Coastal Zone Municipalities, the staff concentrated primarily on zoning classifications.** Figure #8 presents a summary of this information in more general terms which may be of more value to the average citizen. Also, along this line, it was determined that residential development was primarily out of the actual Coastal Zone Management area, and commercial and industrial development was within the Coastal Zone Management area.

With regard to Erosion and Sedimentation Control Reviews, it was determined that the municipalities followed the same review procedure. The municipal engineer, the Bucks County Planning Commission and the Bucks County Conservation District review the erosion and sedimentation control plans. Our interviews with the municipal officials indicated that they felt that three reviews were sufficient to assure adequacy of the plan. This subject will also be addressed within the Conclusions of this report.

*See Figure 2 and 3
**See Appendix B

FIGURE 2

Area of Proposed Land Development in the Coastal Zone Municipalities (1978, 1979, 1980)

Coastal Zone Municipalities	Area of Proposed Development (Acres)
Bensalem Township	358
Bristol Borough	0
Bristol Township	345
Falls Township	286
Morrisville Borough	15
Tullytown Borough	0
Total	1,004

FIGURE 3

Number of Erosion and Sedimentation Control Plans Submitted to Bucks County Conservation District for Review (1978, 1979, 1980)

Coastal Zone Municipalities	Number of Erosion and Sediment Control Plans Submitted to Bucks County Conservation District-1978, 1979, 1980
Bensalem Township	25
Bristol Borough	0
Bristol Township	26
Falls Township	20
Morrisville Borough	3
Tullytown Borough	0
Total	74
Bucks County	417

Overall, the municipalities were very cooperative in assisting the District; providing information upon request and discussing elements of erosion and sedimentation control within their municipality*. Due to their size and areas of responsibility, the boroughs appeared to be more "community oriented." The six municipalities visited were well organized and efficiently run. In Tullytown Borough, the majority of the staff is parttime and many of the complaints from residents are initially handled by the police chief. Tullytown Borough's Subdivision and Land Development Ordinance was prepared for the Borough by the Bucks County Planning Commission. One result of our preliminary meeting with Bensalem Township was an invitation to attend and participate in a public meeting which sought input for a proposed recreation park within the Township. This invitation was a direct result of our preliminary meeting with Bensalem Township officials and their Citizen Advisory Committee representative to the Coastal Zone.

Throughout the course of our interviews, and the other information gathering activities, we noted items of interest which exhibited a certain amount of uniqueness to the Coastal Zone Management Area. One of the first items we noticed was the tendency to divert runoff to the estuary as quickly as possible; the recharging of groundwater is not specifically addressed. Along this line, our interviews indicated that many of the natural watercourses have been eliminated with the filling of wet areas in the 1950's in association with the building boom; i.e., Levittown. Having eliminated these watercourses, those remaining have had to handle increased volumes and velocities of water; consequently, stream bank erosion is more of a problem, and this is compounded in Coastal Zone communities because of their location in the watersheds. Tidal changes occurring in Coastal Zone areas affect the depth of the water table for lower drainage areas, and considering the fact that the lower drainage areas are primarily in the actual Coastal Zone Management area, and we have established the fact that industrial/commercial activities are predominately within this area, there is the potential for groundwater pollution if not carefully monitored.

The District, at one time, had available its own erosion and sedimentation control handbook for general distribution; however, due to a lack of funds for the purpose of reproducing this handbook, we are now providing a listing** of publications which are used by the District in the review process. We recommend that anyone not having a copy of this list obtain a copy to assure uniformity in the submission of erosion and sedimentation control plans.

*See Appendix C
**See Reference 6 and Appendix F

CONCLUSIONS AND RECOMMENDATIONS

The implementation of adequate erosion and sedimentation control plans is of primary importance in the control of accelerated erosion on construction sites. Not only is erosion and sedimentation control legislated by the Clean Streams Law and enforceable by the Pennsylvania Department of Environmental Resources, Bureau of Soil and Water Conservation, but local municipalities have the necessary ordinances to enforce accelerated erosion control. As part of the study the District has been asked to make recommendations which will enhance the reduction in soil loss to acceptable levels. It is the suggestion of the Conservation District that a preconstruction conference for the purpose of reviewing proposed project narratives, construction sequences, and suggested recommendations would serve to establish an open line of communication between all interested parties, and afford the opportunity to assure that recommended construction sequences would be followed. It has been the District's experience that by following recommended erosion and sedimentation control practices and performing construction activities in their proper sequence, accelerated erosion does not occur. Also, this reduces undesireable soil loss figures, reduces sediment pollution and establishes a better reputation for all parties involved. Inasmuch as properly implemented erosion and sedimentation control measures account for one percent to five percent* of construction costs (as estimated by local government engineers), the District would also suggest that costs for erosion and sedimentation controls be considered on the same level as any other construction costs; thereby, reinforcing the cost effectiveness of doing the job properly the first time.

Along this line, the District feels that local governments and engineering firms are aware of the rules and regulations concerned with erosion and sedimentation control, and what constitutes a good erosion and sedimentation control plan; however, the District staff feels that there is definite need for an information and education effort for developers, contractors and earth movers to make them aware that the implementation of good sound erosion and sediment control measures can save them money rather than cost them money. If persistent violators are dealt with in such a manner as to make it more profitable to comply, a major step will be taken to prevent violations of the Clean Streams Law and local ordinances. Reducing violations will not only reduce the amount of soil leaving the site and polluting the water with sediment, but will also reduce the number of citizen complaints in the short run and eliminate potential problems before they occur.

The sharp delineation between commercial/industrial development locations and residential locations was previously mentioned and the District feels that this sharp contrast is also unique. Previously published information** provides insight into the environmentally significant areas existing within the Coastal Zone Management Area. With regard to erosion, sedimentation and water quality, unique situations do exist. Biles Island and Money Island serve as river dredge disposal sites which, when active, eliminate existing vegetative cover and increase the liklihood of erosion and accompanying sediment pollution until vegetation is reestablished. The Conservation District has been involved with the United States Army Corps of Engineers and the Bureau of Soil and Water Conservation in an effort to assure proper erosion and sediment control practices are followed during these operations.

*See Appendix C
**See Reference 4

Woodlands play a very important role in protecting the bodies of water surrounding the various islands. By maintaining forest cover, runoff and erosion problems are eliminated. Water quality in the system of lakes occurring in the Coastal Zone Management Area is directly affected by the quality of the water replenishing them. The majority of the water which replenishes the system is groundwater and as previously mentioned, groundwater does fluctuate with tidal changes, reemphasizing the need for water quality monitoring.

Resulting from their location in the Coastal Zone Management Area, Falls Township and Bristol Township are anticipating the development of marinas within their boundaries. Falls Township has completed the study for their marina and expects it to be completed by 1983. Bristol Township is presently seeking to study the possibility of developing a marina. Realizing that construction activities may result in earth moving, regrading and surface water management problems, it will be extremely important for those responsible for monitoring construction activities to assure all necessary plans, narratives and permits are obtained and local codes and ordinances are followed.

Bensalem Township was found to be unique in that they have a Citizens Advisory Committee to the Coastal Zone Management Area. The Committee, made up of representatives of the Bucks County Planning Commission, Bensalem Parks and Recreation Department and appointed citizen representatives, appointed by the Township Supervisors, is primarily charged with gathering localized information and presenting the information for the purpose of assigning priorities for the Coastal Zone program. Bensalem representative, Thomas Donnelly, represents Bucks County on the regional level, at the Delaware Valley Regional Planning Commission.

To this point the District staff has covered the physical and demographic aspects of the Coastal Zone Management municipalities. One extremely important aspect with respect to erosion and sediment control is the fact that local rules and regulations appear to be adequate for the purpose of controlling erosion and sedimentation; however, if implementation according to these rules and regulations does not take place, then serious erosion does occur and land use related problems exist.

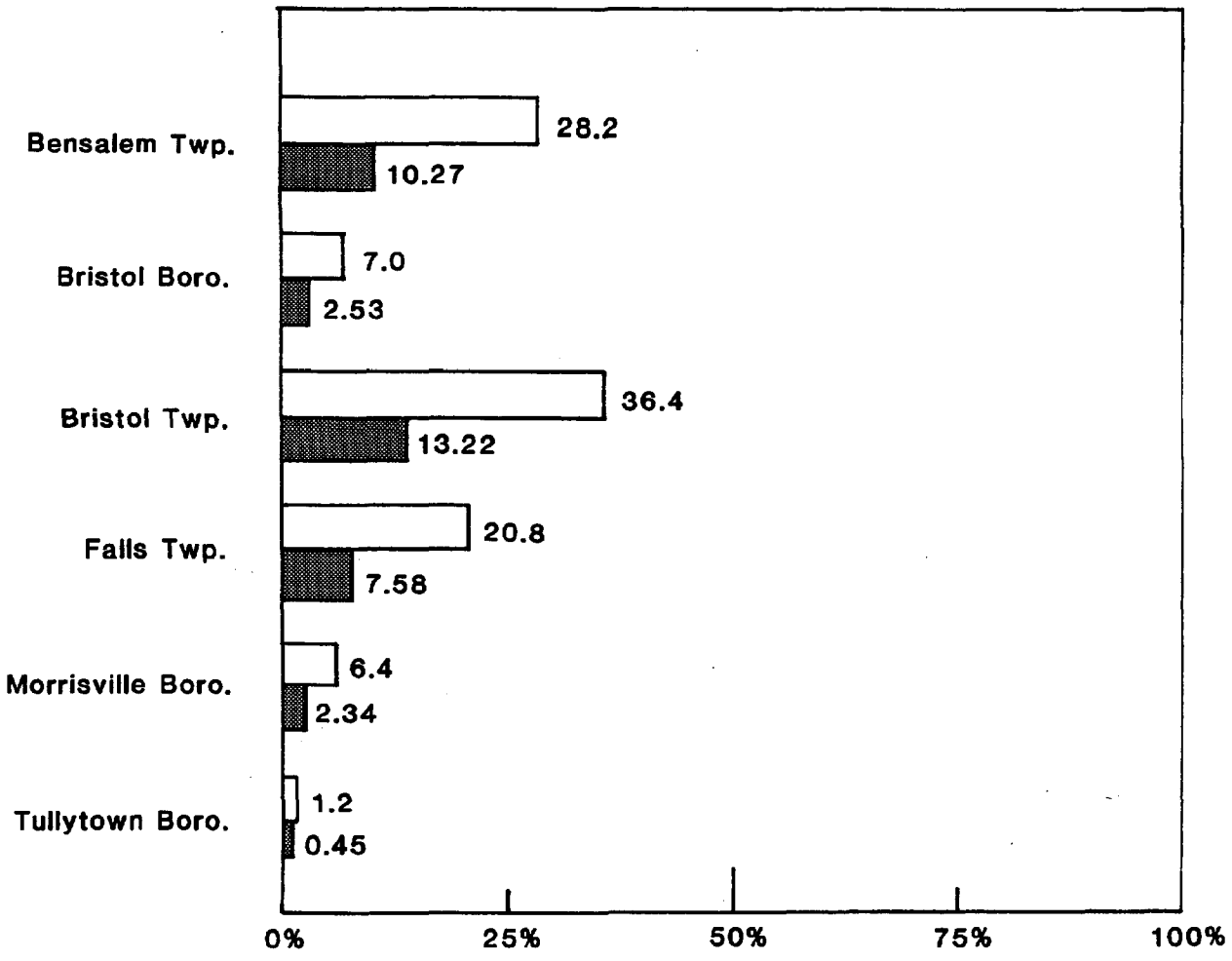
Figures describing the extent of development and populations within the Coastal Zone municipalities* indicate that the majority of the area is developed, and that the population is quite heavily concentrated. If these trends for development and population continue, and the proximity to the major metropolitan area and industrial center indicates that they will, there will no doubt be a need to consider erosion, sediment and stormwater control to a greater extent than is currently being considered. If the current situations, which generally rely on voluntary compliance, fail to prevent serious erosion, induced compliance may be the answer.

Interviews with municipal contacts (Bristol Township, in particular) indicated a definite need to emphasize the importance of proper land use planning. As the land base becomes smaller year after year, and natural water courses become altered, preplanning and flexibility in zoning will become more important, and the off site aspects of subdivision and land development plans will require closer attention especially in the realm of stormwater management.

*See Figures 4, 5, 6A, 6B, 7, 8

FIGURE 4

Graph Illustrating the Comparison of Municipal Population to the Total Population of the Coastal Zone Municipalities and Bucks County



Percent Population versus total Coastal Zone Municipalities

Percent Population versus Bucks County

Obviously the location of the Coastal Zone at the base of several watersheds and subwatersheds has a direct effect on the amount of sediment and stormwater runoff which accumulates and is deposited in the Coastal Zone. If more time and resources were available, aspects of the aerial survey may have warranted more detailed study of the Poquessing, Neshaminy and Delaware Watersheds. Specific questions are anticipated from the individual municipalities concerning these photographs and hopefully these questions can be directed to those individuals of agencies responsible for solving problems, whether they be erosion and sediment control, stormwater, land use, toxic waste or others.

The drought which has gripped the Delaware River Basin since May of 1980 has taught the public the importance of water conservation, and the District feels that it is important to mention the fact that the recharging of groundwater supplies should be taken into consideration wherever possible, the use of grassed waterways versus storm sewers, and the requiring of water conservation plumbing fixtures in all new construction or remodeling, are only a few suggestions which will serve to improve the availability and quality of water for residential and industrial users. Technical expertise is available to local governments and industrial users of large volumes of water through the Bureau of Resources Programming, Pennsylvania Department of Environmental Resources, as to how water can be conserved and used more efficiently.

The results of the District's site visits, presented in Appendix C, reinforce the need for some type of control over the implementation of erosion and sedimentation control plans. Currently, unless a citizen complaint is received, violations often go unnoticed. This points up the importance of citizen involvement, and the need for workable procedures to rectify and enforce violation notices. The previously mentioned Citizens Advisory Committee from Bensalem Township may be a recommendation which other municipalities would like to consider to assist them in becoming aware of problems occurring within their Coastal Zone.

In general, erosion and sedimentation control plan reviews, performed by the District's Soil Conservationist, follow the same general procedure. Each plan is unique, and must be addressed with this uniqueness in mind; however, in the course of the study the District has determined that there are three general reasons why plans, as submitted, are deemed inadequate. Broadly stated, these reasons are erosion control, sediment control and stormwater management. Figures 9A and 9B provide a more detailed summary of inadequate plans and the reasons for their inadequacy.

Population and industrial trends will probably dictate land use to a greater extent than existing zoning; however, proper planning and setting aside recreation areas will have somewhat of an offsetting effect with respect to population and industrial activity. The existence of the Delaware River as a transportation route has probably exerted the primary influence on the previously mentioned delineation between the industrial/commercial and residential areas of the Coastal Zone. The District does not anticipate any significant change in this situation; however, an increased interest in the use of the estuary for recreational purposes is seen, and the District anticipates that this will indirectly affect water quality in a positive way.

From the information presented, the District's major recommendations are:

1) "To assure that the implementation of an approved erosion, sedimentation and stormwater control plan does occur."

Unless implementation occurs, the review process becomes useless, and the credibility of those performing the review is weakened. For the purpose of controlling accelerated erosion, the erosion and sedimentation control plan review can be the most effective tool when it is understood that implementation of the approved plan will be required or construction will be halted.

2) "To establish a system of preconstruction conferences."

At this time, those involved with a proposed project would meet to discuss the project narrative, construction sequence, and any suggested recommendations or changes. As a side benefit, the line of communications should be greatly improved.

3) "To make the public aware of the importance that citizen involvement has in preventing erosion, sedimentation and stormwater problems."

As a lead agency for erosion control on the local level, the Conservation District should accept the responsibility for coordinating efforts directed toward an informed public. The District should also cooperate with the local governments to encourage citizen involvement.

4) "To develop a sound information and education program for contractors and developers (i.e., those directly involved in earth moving)."

As a coordinating agency, the Conservation District should call upon its many local, state and federal cooperating agencies to assist in the presentation of information which will result in the proper implementation of erosion, sedimentation and stormwater plans.

In conclusion, this study has been a definite asset to the Conservation District Staff in a number of ways. The Staff has become more familiar with the Coastal Zone Management Area municipalities, with their management and codes and enforcement staff and with the existing and planned land uses. A great deal has been learned about local government and its programs. Also, the District feels a greater degree of accessibility with those involved with the study, and hopes that they feel the same toward the District having been involved in this study in the Coastal Zone.

FIGURE 5

Land Areas of Coastal Zone Municipalities Versus Bucks County

Coastal Zone Municipalities	Area* Square Miles	Acres	Percent Area of Municipality Versus Bucks County
Bensalem Township	20.9	13,360	3.4
Bristol Borough	1.8	1,180	0.3
Bristol Township	17.2	10,980	2.8
Falls Township	26.4	16,920	4.3
Morrisville Borough	2.0	1,250	0.3
Tullytown Borough	2.1	1,320	0.3
Total	70.4	45,010	11.4
Bucks County	620.0	396,800	

* Area information compiled from Bucks County Planning Commission 1980 Municipal Directory

FIGURE 6A

Land Areas Falling Within Coastal Zone Boundaries

Coastal Zone Municipalities	Area (Acres)	Area of Municipality within Coastal Zone (Acres)	Percent Area of Municipality within Coastal Zone
Bensalem Township	13,360	3,030	22.7
Bristol Borough	1,180	280	23.7
Bristol Township	10,980	2,390	21.8
Falls Township	16,920	9,450	55.8
Morrisville Borough	1,250	440	35.2
Tullytown Borough	1,320	950	72.0
Total	45,010	16,540	
Bucks County	396,800		

FIGURE 6B

Graph Illustrating the Percent Land Area of Each Municipality Falling within the Coastal Zone Management Area

☆ Percent land area of Bucks County actually in the Coastal Zone Management Area

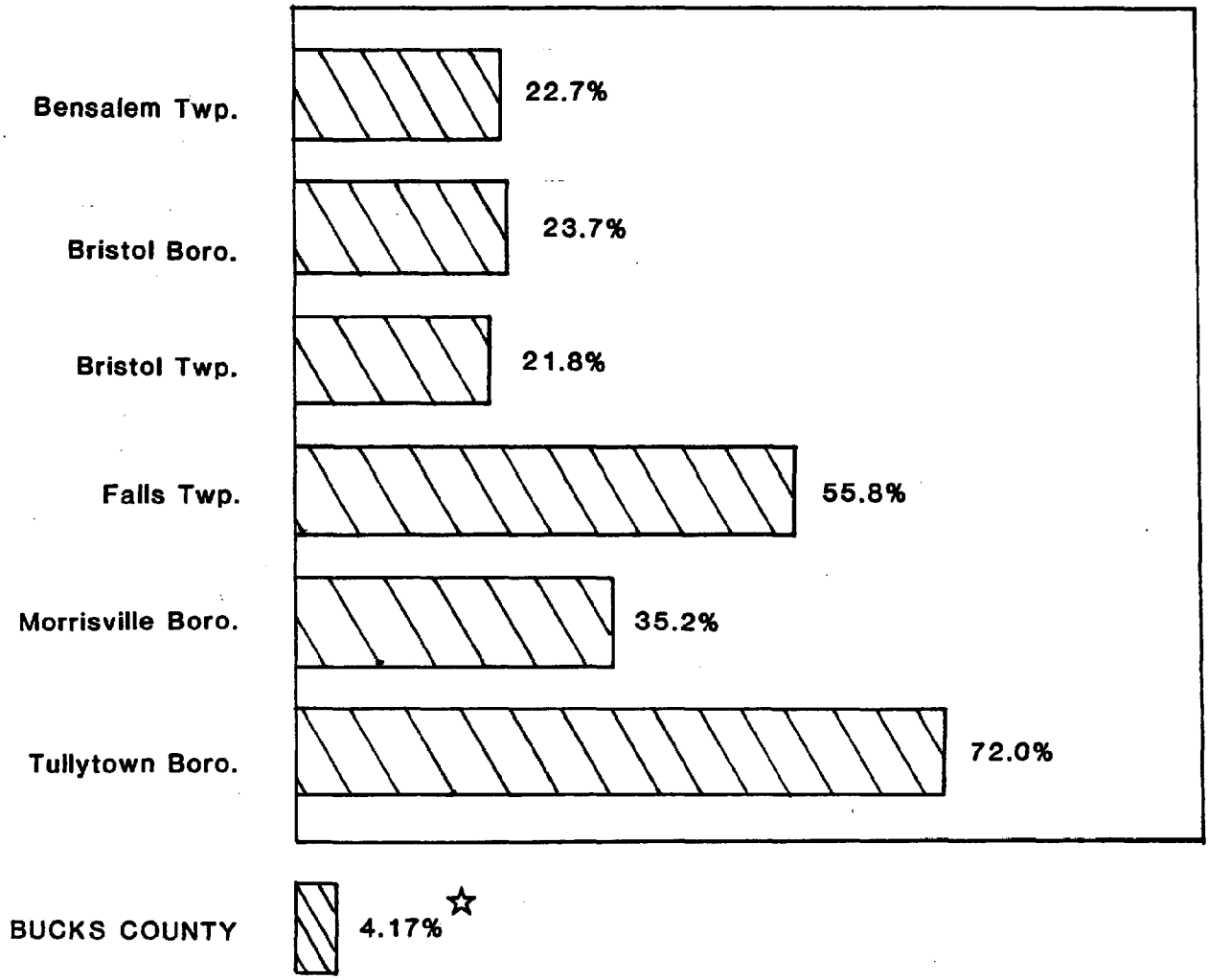


FIGURE 7

Acreage by Zoning Class

Coastal Zone Municipality	Area (Acres) Resi-dential	Histor-ical	Commer-cial	Indus-trial	Sanitary Landfill	Farming & Mining	Total Area (Acres)
Bensalem Township	(Data unavailable - currently in process of revising zoning maps.)						13,360.0
Bristol Borough	538.9	53.8	236.4	350.9	0.0	0.0	1,180.0
Bristol Township	7,084.1	0.0	647.1	3,248.8	0.0	0.0	10,980.0
Falls Township	4,756.0	52.5	1,341.8	9,539.4	164.4	1,065.9	16,920.0
Morrisville Borough	946.4	0.0	113.0	190.6	0.0	0.0	1,250.0
Tullytown Borough	280.2	0.0	101.7	938.1	0.0	0.0	1,320.0

FIGURE 8

Land Area in Open Space Versus Development

Coastal Zone Municipalities	*Percent Open Space	*Percent Developed	Ratio of Open Space Versus Development
Bensalem Township	25	75	1:3
Bristol Borough	1	99	1:99
Bristol Township	25	75	1:3
Falls Township	30	70	1:2.3
Morrisville Borough	1	99	1:99
Tullytown Borough	40	60	1:1.5
Average	20.3	79.7	1:3.9

*Percentages estimated by municipal officials

FIGURE 9A

Number of Erosion and Sedimentation Control Plans Submitted to Bucks County Conservation District That Were Reviewed as Adequate on 1st, 2nd, 3rd Submission (1978, 1979, 1980).

Coastal Zone Municipalities	1st Submission	2nd Submission	3rd Submission	Total Number of Adequate Submissions
Bensalem Township	6	10	3	19
Bristol Borough	-	-	-	-
Bristol Township	10	6	2	18
Falls Township	7	7	1	15
Morrisville Borough	1	0	0	1
Tullytown Borough	-	-	-	-
Total	24	23	6	53
Percent	45.3	43.4	11.3	

FIGURE 9B

List of Erosion and Sedimentation Control Plans Submitted to Bucks County Conservation District That Were Reviewed as Inadequate (1978, 1979, 1980) and Reasons for Inadequacy

	*E	*S	*St
BENSALEM TOWNSHIP			
1. Dumont Valley	X	X	X
2. Faulkner Cadillac	X	X	
3. Metropolitan Industrial Center	X		X
4. Mini Storage Center	X		X
5. Roy Rogers	X	X	X
6. Winding Brook		X	X
BRISTOL TOWNSHIP			
7. Bristol Newspaper Recycling	X		X
8. Cibro Petroleum Inc.	X	X	X
9. Clarion Company Tract	X		X
10. New Building - Turnpike Industrial Center			X
11. Penn-Jersey Service Center			X
12. S.C.P. Contractors, Inc.	X	X	X
13. Wistarwood Sections I, II, III	X		X
14. Worthington Associates	X		
FALLS TOWNSHIP			
15. Breezy Acres Mobile Home Park	X	X	X
16. Brewer's Outlet	X	X	X
17. Disposal Dredging Sites - Delaware River	X		X
18. Red Oak Village Apartments	X		X
19. T.C.A. Office Warehouse			X
MORRISVILLE BOROUGH			
20. Melvin Court Project**	X	X	X
21. Morrisville School District**		X	X

* E = Erosion problem
* S = Sedimentation problem
* St= Stormwater problem

** See Appendix E

REFERENCES

1) The Role of Conservation Districts in the Coastal Zone Management Program, U. S. Department of Commerce, National Oceanic and Atmospheric Administration, (December 1979)

2) Soil Survey of Bucks and Philadelphia Counties, Pennsylvania, United States Department of Agriculture, Soil Conservation Service, (July 1975)

3) Pennsylvania Clean Streams Law, Chapter 102, Title 25

4) Delaware Estuary Coastal Zone Working Paper, Four Environmentally Significant Areas, Delaware Valley Regional Planning Commission, (November 1976)

5) Important Farmlands Map, State of Pennsylvania, (April 1981), U. S. Department of Agriculture, Soil Conservation Service

6) Memorandum: Publications Used in Land Development Reviews, Bucks County Conservation District, L. J. Manai, (January 23, 1981)

7) The Concise American Heritage Dictionary, (1980), William Morris (editor)

8) Soil Erosion and Sedimentation Control Manual, (April 15, 1978), Pennsylvania Department of Environmental Resources, prepared by Afton Schadel, Thomas B. Koons, Gerald W. Root

9) Elementary Soil and Water Engineering, (1971) Glenn O. Schwab, Kenneth K. Barnes, Richard K. Frevert, Talcott W. Edminster

10) Falls Township, Subdivision and Land Development Ordinance, Chapter 191, (1978)

11) Morrisville Borough Zoning Ordinance, Bucks County Planning Commission, (October 1980)

12) Approved Practices in Soil Conservation, Albert B. Foster, (1973)

13) Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas, U. S. Department of Agriculture, Soil Conservation Service, (July 1975)

14) Municipal Directory, Bucks County, 1980, Bucks County Planning Commission

GLOSSARY

1. Catch basin - An oversized stormwater inlet used to trap and hold stormwater runoff.

2. Culvert - A drain crossing under a road or embankment. (CAHD)

3. Cut face - The exposed soil surface usually resulting from excavation.

4. Detention basin - A structure built for the purpose of temporary storage of runoff and the release of runoff at controlled sites.

5. Drainage - The removal of excess surface or groundwater from land by means of surface or subsurface drains, infiltration, ponding and other accepted measures.

6. Drainage easement - The permissive use of a parcel of land for the purpose of removing surface water runoff from another parcel, subdivision or development.

7. Drainage facility - Any swale, pipe, culvert, storm sewer, detention basin, or structure constructed for the purpose of diverting or carrying surface water off streets, public rights-of-way, parks, recreation areas, or any part of any subdivision or land development. (Falls S & LD)

8. Dwelling unit - Any room or group of rooms forming a single habitable unit with facilities for living, cooking, sleeping and sanitary facilities for one family.

9. Easement - A grant of the use of a parcel of land to the public, a corporation, or person, for a specified purpose. (Falls S & LD)

10. Erosion - The natural process by which the surface of the land is worn away by the action of water, wind or chemical action. (E & S)

11. Land development - The constructing, installing, placing, planting, or building of surface structures such as utility lines, shopping centers, golf courses, apartment complexes, schools, roads, highways, parking areas, or any other similar activity. (E & S)

12. Natural drainage - The movement of excess surface water through a parcel of land by artificial means. This includes swaling, ditching, contouring and other related existing topographical conditions.

13. One-hundred year storm - A storm that, on the average, is likely to occur once every one-hundred years. A storm that has a one percent chance of occurring each year, although the storm may occur in any year.

14. Open space - Land used for recreation, resource protection amenity, or buffers, and is freely accessible to all residents. (Morrisville Z)

15. Runoff rate - The velocity with which precipitation makes its way toward stream channels, lakes or oceans as surface flow. (ESWE)

16. Service request - A complaint handling form developed and used by Bensalem Township to assure residents that complaints are attended to.

17. Settlement - The shrinking action of fill.

18. Silt trap - Natural or man-made devices designed to prevent the movement of sediment at certain locations.

19. Stabilization - The proper placing, grading, and/or covering of soil, rock, or earth to insure their resistance to erosion, sliding, or other movement. (E & S)

20. Storm drainage system - A drainage system specifically designed for the transport, storage, and release of stormwater. These systems are especially found in areas with a high percentage of impervious area.

21. Subdivision - The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other division of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership, or building or lot development. (E & S)

22. Subsurface drainage - The removal of excess water using underground structures such as pipes, tiles, and related structures. (ESWE)

23. Surface drainage - The removal of excess water using open ditches, field drains, land grading, and related structures. (ESWE)

24. Swale - An excavated drainageway located across or along the perimeter of disturbed areas. (S & S)

25. Topographical conditions - The existing characteristics of the land.

26. Topographically unstable - An area determined by site investigation to be unsuitable for development, discharge and/or other activities due to natural or existing land conditions.

27. Watershed - The total land area, regardless of size, above a given point on a waterway that contributes runoff water to the flow at that point. (SC)

CADH - The Concise American Heritage Dictionary, (1980) William Morris (editor)

E & S - Soil Erosion and Sedimentation Control Manual, (4-15-78) Pennsylvania Department of Environmental Resources, prepared by Afton V. Schadel, Thomas B. Koons, Gerald W. Root

ESWE - Elementary Soil and Water Engineering, (1971) Glenn O. Schwab, Kenneth K. Barnes, Richard K. Frevert, Talcott W. Edminster

Falls S & LD - Falls Township Subdivision and Land Development Chapter 191, (1978)

Morrisville Z - Morrisville Borough Zoning Ordinance, (October 1980) Bucks County Planning Commission

SC - Approved Practices in Soil Conservation, (1973) Albert B. Foster

S & S - Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas, (July 1975) United States Department of Agriculture, Soil Conservation Service

APPENDICES

Appendix A	Key Words
Appendix B	Charts and Graphs
Appendix C	Questionnaire Survey and Local Enforcement Data
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APPENDIX A

KEY WORDS

APPENDIX A

KEY WORD	Bensalem Twp.	Bristol Twp.	Bristol Boro	Falls Twp.	Morrisville Boro	Tullytown Boro
Bucks County Conservation District		+		*		
building	*+	*+		*+	*+	*
building coverage	*+	*+	*	*+	*+	*
building density	*+	+	*	*+	*+	*
buffer strip	*+	*+	*+	*+	*+	*
cartway	*+	+		+	+	
conservation	+			*+	+	*
contour(s)	*+	*+	+	*+	*+	
cul-de-sac	*+	+	+	+	+	
culvert	+	+	+	*+	+	
curb drainage						
cut	+	+	+	+	*+	
drainage	*+	*+	*+	*+	*+	*
drainage (natural)	+	+	+	*+		
drainage swale	+	+		+		
dredging	*	*		*	*	*
driveway	*+	+	*+	*+	*+	*
easement	*+	+	+	+	*+	
easement (drainage)	+	+	+	+	+	
easement (temporary)				+		
erosion	+	+	*+	*+	*+	*
excavating	+	*+		*+		
fill	*+	*+	+	*+	*+	*
flood(ing)	*+	*+	*	*+	*+	*
flood hazard	*+	*	*	*+	+	*

*Indicates this word is addressed in the Zoning Ordinance

+Indicates this word is addressed in the Subdivision and Land Development Ordinance

*+Indicates this word is addressed in both the Zoning and Subdivision and Land Development Ordinance

APPENDIX A

KEY WORD	Bensalem Twp.	Bristol Twp.	Bristol Boro	Falls Twp.	Morrisville Boro	Tullytown Boro	REMARKS
grade(ing)	*+	*+	*+	*+	*+	*	
grade (minimum)	+	+	+	+	+		
grade (maximum)	+	+	+	+	+		
impervious (pervious)	*+	*+			*	*	
inlet	+		+	+			
ground cover	*+	+		*			
ground water	*+	*	+	*		*	
landscaping	*+	*+	*+	*+	*+	*	
landscaping requirements	+						
lawn	*+	*+		*+	*+		
mining				*			
obstruction	*			*			
open space	*+	*+	*+	*+	*+	*	
paving	*+	*+	+	*+	*+	*	
parking area(s)	*+	*+	*+	*+	*+	*	
pipe	*+	*+		+	+		
plan (sketch)		+	+	+	+		
plan (preliminary)	*+	+	+	+	+		
plan (final)	+	+	+	+	+		
planting(s)	*+	*+	*+	*+	*+	*	
planting strip	*+	+	+	+	*+	*	
pollution	*	*		*	*	*	
residential	*+	*+	*+	*+	*	*	
right-of-way	*+	*+	*+	*+	*+	*	
runoff	+	+	+	*	*+		
sanitary landfill	*			*	*	*	

APPENDIX A

KEY WORD	Bensalem Twp.	Bristol Twp.	Bristol Boro	Falls Twp.	Morrisville Boro	Tullytown Boro	REMARKS
sediment	+	*+		*+			
sedimentation	+	*+		*+	*		
seeding	+						Falls Township mentions Bucks County Conservation District concerning mudslide prone areas.
service request	O						
sewage	*+	*+	*+	*+	*+	*	
sewer (storm)	*+	+	+	*+	*+	*	
sidewalk	*+	*+	+	*+	*+	*	Bristol Township states that Bucks County Conservation District should receive one copy of final plan for major subdivision and nonresidential development.
sliding (soil)	*			*+			
slope	*+	+	+	*+	*+	*	
sodding	+	*				*	
soil	*+	+				*	
soil condition	+	+		+		*	Bristol Township prior to excavating or grading developer should consult with Bucks County Conservation District.
stable				+			
stream	*+	*	+	*+	*+	*	
streets	*+	*+	*+	+	+		
surface water	*+	+			+	*	
waste disposal	*	*	*+	*	*	*	
waste storage	*	*	*	*	*	*	
water	*+	*+	*+	*+	*+	*	
watercourse	*+	*+	+	*+	*+	*	
waterway(s)	*+	+	+	+	*+	*	
wetland(s)	+				*+		
yard	*+	*+	*+	*+	*+	*	

OIndicates Bensalem Township complaint handling mechanism.

APPENDIX B

CHARTS AND GRAPHS

FIGURE 10

PERTINENT REGULATIONS AND CRITERIA

(Specifically Addressed by Ordinance)

Municipalities	Building	S & L D	Plumbing	Zoning	Grading	Stormwater	Open Space	Others
Bensalem Twp.	Yes	Yes	Yes BOCA	Yes	Yes	Yes	Yes	Flood Plain Planting or Landscaping Drainage Easement
Bristol Boro	Yes	Yes	Yes BOCA	Yes	Yes	Yes	Yes	Drainage Easement Flood Plain Planting or Landscaping
Bristol Twp.	Yes	Yes	Yes BOCA	Yes	Yes	Yes	Yes	Buffer Yards Flood Plain Drainage Easement
Falls Twp.	Yes	Yes	Yes BOCA	Yes	Yes	Yes	Yes (recreation space)	Flood Plain Planting or Landscaping Drainage Easement
Morrisville Boro	Yes	Yes	Yes BOCA	Yes	Yes	Yes	Yes	Drainage Easement Flood Plain Planting
Tullytown Boro	Yes	Yes Written by BCPC	Yes *BOCA	Yes	--	--	Yes	Flood Hazard Requirements Buffer Yards
Remarks:		BCPC=Bucks County Planning Commission						BOCA Codes used by all municipalities *BOCA - Plumbing by selection

Summary of Zoning Code Abbreviations

Bristol Borough

R-1	Residence District
R-2	Residence District
H	Historical District
NC	Neighborhood Commercial District
CC	Central Commercial District
HC	Highway Commercial District
I	Industrial District
M-1	Modified Industrial District

Bristol Township

R-1	Residence Districts
R-2	Residence Districts
R-3	Residence Districts
R-4	Residence District
C	Commercial Districts
CN	Commercial Neighborhood Districts
CS	Shopping Center Districts
M-1	Light Manufacturing Districts
M-2	Heavy Manufacturing Districts
P-I	Planned Industrial Districts
R-T	Residence Districts
C-SS	Commercial Service Station Districts
P-O	Professional Office Commercial Districts

Falls Township

NCR	Neighborhood Conservation Residential
LR	Low-Density Residential
LMR	Low-Medium Density Residential
MR	Medium-Density Residential
MHR	Medium-High Density Residential
HR	High-Density Residential
HR-E	High-Density Residential (Elderly)
MHP	Mobile Home Park
HD	Historical District
BP	Business and Professional District
HC	Highway Commercial
SC	Shopping Center Commercial
NC	Neighborhood Commercial
CR	Commercial Recreation
FM	Farming and Mining
LI	Light Industrial
HI	Heavy Industrial
PIP	Planned Industrial Park
MP	Metal Production and Port District
SL	Sanitary Landfill
TT	Transportation Terminals

Summary of Zoning Code Abbreviations

Morrisville Borough

R-1	Residential District
R-2	Residential District
R-2A	Residential District
R-3	Residential District
R-4	Residential District
C-1	Central Commercial District
C-2	Shopping Center District
C-3	Neighborhood Commercial District
L-I	Light Industrial District
I	Industrial District

Tullytown Borough

R-1	Residential 1 District
R-2	Residential 2 District
BC	Borough Center District
C	Commercial District
SC	Shopping Center District
LI	Light Industrial District

(Bensalem Township has not been included due to current revision process taking place within the Township.)

Percentage of Municipal Land Area by Zoning Class

BRISTOL BOROUGH

Zone	Area *(Acres)	Percent Area
R-1	173.5	14.70
R-2	365.4	30.97
H	53.8	4.56
NC	9.8	0.83
CC	63.6	5.39
HC	163.0	13.81
I	315.4	26.73
M-1	35.5	3.01
	1,180.0	

BRISTOL TOWNSHIP

Zone	Area *(Acres)	Percent Area
R-1	1,179.2	10.74
R-2	2,323.3	21.16
R-3	3,531.0	32.16
R-4	24.2	0.22
C	613.7	5.59
CN	7.7	0.07
CS	24.2	0.22
M-1	828.9	7.55
M-2	1,948.9	17.75
P-I	471.0	4.29
R-T	26.4	0.24
C-SS	1.1	0.01
P-O	0.4	<0.01
	10,980.0	

* Areas hand calculated using planimeter

Percentage of Municipal Land Area by Zoning Class

FALLS TOWNSHIP

Zone	Area *(Acres)	Percent Area
NCR	2,345.1	13.86
LR	1,055.8	6.24
LMR	148.9	0.88
MR	155.6	0.92
MHR	267.3	1.58
HR	468.6	2.77
HRE	40.6	0.24
MHP	274.1	1.62
HD	52.5	0.31
BP	50.8	0.30
HC	247.0	1.46
SC	86.3	0.51
NC	174.3	1.03
CR	783.4	4.63
FM	1,065.9	6.30
LI	1,245.3	7.36
HI	4,321.3	25.54
PIP	742.8	4.39
MP	3,189.4	18.85
SL	164.4	0.97
TT	40.6	0.24
	16,920.0	

* Areas hand calculated using planimeter

Percentage of Municipal Land Area by Zoning Class

MORRISVILLE BOROUGH

Zone	Area *(Acres)	Percent Area
R-1	147.6	11.81
R-2	540.2	43.22
R-2A	173.0	13.84
R-3	54.0	4.32
R-4	31.6	2.53
C-1	45.8	3.66
C-2	25.8	2.06
C-3	41.4	3.31
L-I	34.9	2.79
I	155.7	12.46
	1,250.0	

TULLYTOWN BOROUGH

Zone	Area *(Acres)	Percent Area
R-1	217.3	16.46
R-2	26.3	1.99
BC	36.6	2.77
C	6.3	0.48
SC	95.4	7.23
LI	938.1	71.07
	1,320.0	

* Areas hand calculated using planimeter

APPENDIX C

QUESTIONNAIRE SURVEY AND LOCAL ENFORCEMENT DATA

BUCKS COUNTY CONSERVATION DISTRICT
BOX 16, 4259 SWAMP ROAD
DOYLESTOWN, PENNSYLVANIA 18901
215 / 348-1166

MEMORANDUM:

TO: Coastal Zone Municipalities

FROM:: John Thomas, Executive Assistant

SUBJECT: Questionnaire/Coastal Zone Study

DATE: April 24, 1981 (Arbor Day)

Could you please complete the following questionnaire to assist the District in the completion of our Coastal Zone Management Study. Your cooperation is greatly appreciated.

APPENDIX C
FIGURE 12

Summary of Questionnaire Survey*

Question #	Question Intent	Number of Responses Yes	No
1	Do many erosion, sedimentation and stormwater problems exist in your municipality?	3	2
2,3	Is there potential for future development in your municipality?	3	2
4	Are construction activities monitored locally?	5	0
5	Are erosion, sedimentation and stormwater problems among the most prevalent violations of local codes and ordinances?	0	5
6	Does your municipality experience unique situations relative to its location in the Coastal Zone Management Area?	5	0
7	How effective is the current erosion and sedimentation control program? (Yes answer indicates effective.)	5	0
8	Is there a concern for erosion control within the municipality?	3	2
9	Can you estimate construction costs attributed to erosion and sedimentation control?	4	1
10	Suggest changes to the erosion and sedimentation control program?	3	2

* Response not received from Morrisville Borough

MUNICIPALITY_____ DATE SENT_____

RESPONDENT_____ TITLE_____

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater?

2. Is there much potential for future development in your municipality?

3. What percentage of your municipality would you say is available for development?

4. Who monitors construction activities for your municipality?

5. What is the most prevalent violation to your local codes and ordinances?

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone?

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective_____ Moderately effective_____

Slightly effective_____ Not effective_____

8. Do you feel that there is a concern for erosion control in your municipality?

Yes_____ No_____

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?

10. What changes would you make to the Erosion and Sediment Control program?

295-8181

APPENDIX C

MUNICIPALITY Morrisville Boro DATE SENT_____

Terry Lipowski

RESPONDENT_____ TITLE_____

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater?

2. Is there much potential for future development in your municipality?

3. What percentage of your municipality would you say is available for development?

4. Who monitors construction activities for your municipality?

5. What is the most prevalent violation to your local codes and ordinances?

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone?

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective_____ Moderately effective_____

Slightly effective_____ Not effective_____

8. Do you feel that there is a concern for erosion control in your municipality?

Yes_____ No_____

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?

10. What changes would you make to the Erosion and Sediment Control program?

APPENDIX C

MUNICIPALITY Bristol Township DATE SENT 4-28-81

RESPONDENT N.M. Mabee TITLE Bristol Twp Manager

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater?
   Yes - note Silver Lake

2. Is there much potential for future development in your municipality?
   Considerable.

3. What percentage of your municipality would you say is available for development?
   Please refer to County Planning Statistics - most accurate.
   [Incorporated in written Report JAT]

4. Who monitors construction activities for your municipality?
   L&I Depts and Township Engineer. Re: written Report (JAT)

5. What is the most prevalent violation to your local codes and ordinances?
   Improper Zoning use.

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone?
   Yes - Tidal changes affects, town drainage areas.

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

   Very effective_____ Moderately effective X

   Slightly effective_____ Not effective_____

8. Do you feel that there is a concern for erosion control in your municipality?

   Yes X No_____

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?
   2
   [Incorporated in written Report JAT]

10. What changes would you make to the Erosion and Sediment Control program?
    We find the subdivision review most helpful!

APPENDIX C

MUNICIPALITY Tullytown Borough DATE SENT June 21

RESPONDENT Joseph G. Caruso, P.E. of William G. Major Associates TITLE Borough Engineers

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater? Yes. Erosion along Martin's Creek.

2. Is there much potential for future development in your municipality?
Moderate

3. What percentage of your municipality would you say is available for development?
40%

4. Who monitors construction activities for your municipality?
Building Inspector

5. What is the most prevalent violation to your local codes and ordinances?
Safety violations of the Fire Code

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone?
Yes, erosion of stream banks a problem due to location in the watershed.

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective x Moderately effective _____

Slightly effective _____ Not effective _____

8. Do you feel that there is a concern for erosion control in your municipality?

Yes x No _____

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?
1 to 5%

10. What changes would you make to the Erosion and Sediment Control program?

More site visits to insure compliance with approved Erosion and Sediment Control Plan and funding should be provided to alleviate continual erosion areas. Otherwise, program is reasonable, productive in reducing sediment pollution and erosion and reviews are generally helpful and quick.

295-4176

APPENDIX C

MUNICIPALITY Falls Twp DATE SENT

RESPONDENT Sue Patton / & David Cooper TITLE Zoning Officer

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater? yes (Re: Levittown drainage ditches)

2. Is there much potential for future development in your municipality?
not a great deal intended

3. What percentage of your municipality would you say is available for development? ≈ 20 that will actually be developed.

4. Who monitors construction activities for your municipality?
Zoning Officer

5. What is the most prevalent violation to your local codes and ordinances?
-Fences-

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone? stream bank erosion

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective X Moderately effective

Slightly effective Not effective

8. Do you feel that there is a concern for erosion control in your municipality?

Yes No X (not as much as Should be)

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?
2-5% (+) Remove Associates

10. What changes would you make to the Erosion and Sediment Control program?

APPENDIX C

SUPPLEMENTAL TO QUESTIONAIRE SURVEY

BENSALEM TOWNSHIP

What changes would you make to the Erosion and Sediment Control Program?

Tom Tams, Township Engineer: Bensalem Township

Re: Chapter 102 and pages 7-9 E & S Control Manual, DER

a - State specifically that run off calculations should be furnished; not just the method used.

b - Consider felxibility in cost determination. (for off site surface water control)

c - Recommend - rock berms, filter fabric instead of hay bales.

d - Encourage the use of clean off areas.

e - Study porous pavement - seems to be adequate on level area (parking lots) not good for roads, (you have to get rid of water on the roads).

f - Stages of construction, could be shown in drawings vs. narrative.

639-2500

APPENDIX C

MUNICIPALITY Penndel DATE SENT _____

RESPONDENT Tom Tams TITLE Twp. Engineer

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater? NOT MANY That Know of.

2. Is there much potential for future development in your municipality? Quite a bit.

3. What percentage of your municipality would you say is available for development? 15 - 25%

4. Who monitors construction activities for your municipality? Twp Engineer, Building/Zoning Officer

5. What is the most prevalent violation to your local codes and ordinances? Occupancy Permits.

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone? Possible groud water problem (raised water table

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective _____ Moderately effective X

Slightly effective _____ Not effective _____

8. Do you feel that there is a concern for erosion control in your municipality?

Yes ✓ No _____

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control? MAX 10% (Depend on the Size of Dev.

10. What changes would you make to the Erosion and Sediment Control program?

{785-4501

APPENDIX C

MUNICIPALITY Bristol Boro DATE SENT _____

RESPONDENT Schilling TITLE Zoning Officer

1. Has your municipality experienced many problems with erosion and sediment control, or stormwater?

NOT MUCH

2. Is there much potential for future development in your municipality?

NO

3. What percentage of your municipality would you say is available for development?

5-10% MAXIMUM

4. Who monitors construction activities for your municipality?

Liscences & Inspections

5. What is the most prevalent violation to your local codes and ordinances?

Rental Units Deteriorating / Absentee Owners

6. Has your municipality encountered any unique problems due to the fact that you are located in the Coastal Zone?

OTTER Creek

7. Based on your experience, how effective do you feel the Erosion and Sedimantation Program has been since enactment of the Clean Streams Law?

Very effective _____ Moderately effective X

Slightly effective _____ Not effective _____

8. Do you feel that there is a concern for erosion control in your municipality?

Yes _____ No X

9. Can you estimate (based upon experience) what percentage of construction costs are attributed to erosion control?

5% MAXIMUM

10. What changes would you make to the Erosion and Sediment Control program?

Contact Engineer - Mid-Atlantic
638-1130
Bruce Campbell

MEMORANDUM

To: Bruce Campbell

From: John A. Thomas, Executive Assistant

Subject: Effectiveness of the Erosion and Sediment Control Program

Date: May 29, 1981

With regard to our telephone conversation of this date, could you please summarize what changes you would make to the Erosion and Sedimentation Control Program, as administered by Pennsylavnia Department of Environmental Resources, based upon Chapter 102, of the Clean Streams Law.

WILLIAM G. MAJOR ASSOCIATES, INC.
CONSULTING ENGINEERS • ARCHITECTS • PLANNERS • SURVEYORS

BRANCH OFFICE
P. O. BOX 530
BURLINGTON, NEW JERSEY 08016
609 386-4438

EXECUTIVE OFFICES
110 MILL STREET
P. O. BOX 603
BRISTOL, PENNSYLVANIA 19007
215 785-3288

April 16, 1981

Bucks County Conservation District
Box 16, 4259 Swamp Road
Doylestown, PA 18901

Att: Mr. John A. Thomas
Executive Assistant

Re: Erosion, Sediment and
Stormwater Problems

Dear John:

This letter is written in response to your letter of April 14, 1981 requesting information regarding enforcement of local municipalities' ordinances regarding the subject.

Other than infrequent requests for advice from local municipalities we have very little to do with enforcement of such ordinances. However, the Bucks County bridge reconstruction program involves work which necessarily must comply with all local ordinances. Applicable provisions are considered when planning work operations and an attempt to eliminate or reduce erosion and stream pollution is made by incorporating anti-pollution and erosion control devices on the construction drawings. On these projects, effective enforcement is maintained by our full-time Inspector who requires the Contractor to comply with the construction drawings and specifications. If planned methods prove ineffective, the Engineer is alerted and additional or different measures may be ordered to obtain the desired results.

Summing up then, our enforcement primarily consists of full-time supervision of the Contractor's activities with enforcement provisions specified in the Contract Documents and special authority granted the Engineer by those documents even in unforeseen circumstances.

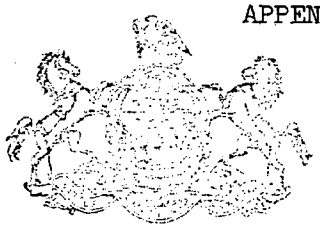
Very truly yours,

Joseph G. Caruso, P.E.
WILLIAM G. MAJOR ASSOCIATES, INC.
Bucks County Engineers

JGC/pb

APPENDIX C

BENSALEM TOWNSHIP
BOARD OF SUPERVISORS



638-2500

3800 HULMEVILLE ROAD, BENSALEM, PA. 19020

OFFICE OF: Superintendent of Parks and Recreation

MEMORANDUM

TO: Kenneth D. Kugel, Chief Planner
Bucks County Planning Commission

Gerald M. Sudick, Ass't Manager
Coastal Zone Management Office

Michael A. Wolf, Chief
Delaware Valley Regional Planning Commission

John Thomas
Bucks County Conservation District

FROM: Jerry A. Andree, Superintendent
Parks and Recreation Department

SUBJECT: James Armstrong Memorial Park

DATE: April 16, 1981

The first public meeting to receive public input on the development of the Master Plan for James Armstrong Memorial Park will be held on Tuesday, April 28 at 7:30 p.m. in the Township Municipal Building. Your input and direction would be most appreciated at this meeting.

JAA/ti

cc. Natalie Strange, Township Manager
Tom Donnelly
Jim Graft, Carroll Engineering

BENSALEM TOWNSHIP
BOARD OF SUPERVISORS

639-2500

3800 HULMEVILLE ROAD, BENSALEM, PA. 19020

OFFICE OF: Township Manager

April 20, 1981

Mr. John A. Thomas
Executive Assistant
Bucks County Conservation District
Box 16, 4259 Swamp Road
Doylestown, Pa. 18901

Dear Mr. Thomas:

In response to your April 14, 1981 letter requesting Bensalem Townships' policies and procedures by which erosion and sediment, stormwater problems are handled.

Enclosed is a copy of Ordinance 212 which requires a permit to alter land in Bensalem, the permit approval is given by the Board of Supervisors upon the recommendation of our full time Township Engineer.

If you have any further questions, please feel free to contact me.

Very truly yours,

Natalie A. Strange
Township Manager

Encl.
NAS/sd

ORDINANCE NO. 212

AN ORDINANCE TO REGULATE AND CONTROL ANY GRADING OR ALTERATION OF LAND, PROPERTY OR REAL ESTATE IN BENSALEM TOWNSHIP WHICH HAS THE EFFECT OR ALTERING OR INCREASING OR DECREASING THE COURSE AND FLOW OF SURFACE OR GROUND WATER: PROVIDING FOR THE PRIOR APPROVAL BY THE BOARD OF SUPERVISORS, THE ISSUANCE OF PERMITS AND PROVIDING FOR PENALTIES FOR VIOLATION.

WHEREAS, the Board of Supervisors of the Township of Bensalem is of the opinion that the unregulated and uncontrolled grading, alterationor other like change to land, property or real estate levels has the effect of altering or increasing or decreasing the course and flow of surface or ground waters and is detrimental to both lands adjacent to such and to the Township in general, and such creates a hazard and is detrimental to the public safety, health and general welfare, and such threatens substantially the efforts of the Township of Bensalem to carry out its general purpose.

NOW THEREFORE, be it enacted and ordained and it is hereby enacted and ordained that:

1. It shall be unlawful without the prior approval of the Board of Supervisors of Bensalem Township and the issuance of a permit by the Board of Supervisors for any person, partnership, firm or corporation to change, grade, or in any way alter any land, property or real estate in Bensalem Towhsnip so as to cause, allow or permit surface waters or ground waters to flow in an increased or decreased manner, or in a direction such surface waters or ground waters would not normally take.

2. For purposes of this Ordinance, surface water is defined as waters which normally flow on the surface of the ground, such as creeks, brooks, rivers, lakes and ponds; waters on the surface of the ground created by rain or snow; and waters which are of a casual or vagrant character, such as puddles and all temporary flows of water on the surface of the ground which have no definite course and have no substantial or permanent existence.

3. For purposes of this Ordinance, ground water is defined as water of underground streams, channels, artesian basins, reservoirs, lakes and other occurences of water in and under the grounds, whether percolating or otherwise.

4. Any person, firm or corporation violating any of the provisions of this Ordinance shall be subject to a fine not exceeding Three Hundred ($300.00) Dollars. each and every violation of this Ordinance, on each day that any provisions of this Ordinance shall have been violated shall be contrued as a separate and distinct violation thereof. All fines imposed under this Ordinance shall be collected by suit or summary proceedings brought in the name of the Township before any District Justice of the Peace. Proceedings for the violation of this Ordinance and for the collection of fines imposed hereby may be commenced by warrant or by summons at the discretion of the District Justice of the Peace before whom the proceeding is begun.

5. Ordinance Number 140 enacted October 20, 1971, and all Ordinances or parts of Ordinances inconsistent with the provisions of this Ordinance are hereby repealed, to the extent of their inconsistency.

6. If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held invalid or unconstitutional by any Court of compentent jurisdiction, such portion shall be deemed a separate, distinct and independent provisions and such holding shall not affect the validity of the remaining portion of this Ordinance.

7. This Ordinance shall take effect five (5) days after its enactment.

Ordained and Enacted this 22nd day of October, 1976.

BOARD OF SUPERVISORS
BENSALEM TOWNSHIP

Stephen J. Kelly

Herbert H. Braden

Donald Bell

William P. McFadden

ATTEST

Natalie A. Strange
Secretary- Treasurer

APPENDIX D

SOILS DATA

A-CONS-1
v. 2-69
le Code Cons-14)

USDA Soil Conservation Service
Harrisburg, Pa.

LAND CAPABILITY CLASSES

LAND SUITED FOR CULTIVATION AND OTHER USES

CLASS I — Few limitations which restrict use.

CLASS II — Moderate limitations which may reduce the choice of plants and/or require simple conservation measures.

CLASS III — Severe limitations which may reduce choice of plants and/or require special conservation measures.

CLASS IV — Very severe limitations which restrict the choice of plants and require very careful management and/or conservation measures.

LAND LIMITED IN USES - GENERALLY NOT SUITED FOR CULTIVATION

CLASS V — Severe limitations which are impractical to remove. Use is limited largely to pasture, woodland, or wildlife.

CLASS VI — Severe limitations. Generally unsuited for cultivation. Use is largely limited to pasture, woodland, wildlife, or some recreation.

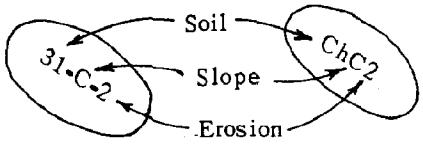
CLASS VII — Very severe limitations. Unsuited for cultivation. Use largely limited to pasture, woodland, wildlife, or some recreation.

CLASS VIII — Very severe limitations. Use is limited to watershed protection, wildlife, or some recreation.

CAPABILITY SUBCLASSES

(e) Erosion; (w) Wetness or flooding, or both; (s) Shallowness, droughtiness, stoniness, or low fertility, or a combination of these conditions.

MEANING OF SYMBOLS AND LINES ON YOUR COLORED MAP



SLOPE

A - Nearly level
B - Gently sloping
C - Moderately sloping
D - Moderately Steep
E - Steep
F - Very steep

EROSION

1 - Slight erosion
2 - Moderate erosion
3 - Severe erosion
4 - Very severe erosion

DESCRIPTION OF THE SOIL MAPPING UNITS IDENTIFIED ON YOUR LAND

U.S. GOVERNMENT PRINTING OFFICE 1978-710-628

SOILS IN THE COASTAL ZONE - DESCRIPTION

1. AgA - Alton gravelly loam, 0 to 3% slopes, IIIs-1

   This deep, well-drained, nearly level soil formed in very gravelly outwash material derived from shale, sandstone, quartzite, and some limestone. This soil is droughty but is suited to most crops commonly grown in the area. The erosion hazard is slight to moderate.

2. AgB - Alton gravelly loam, 3 to 8% slopes, IIIs-1

   This deep, well-drained, gently sloping soil formed in very gravelly outwash material derived from shale, sandstone, quartzite, and some limestone. This soil is droughty but is suited to most crops commonly grown in the area. The erosion hazard is slight to moderate.

3. CeB - Chester silt loam, 3 to 8% slopes, IIe-2

   This deep, well-drained, gently sloping soil formed in loamy material weathered chiefly from gneiss and schist. It is found on sides and tops of ridges. Most of this soil is used for crops and pasture. The erosion hazard is slight to high.

4. Fa - Fallsington silt loam, gravelly subsoil variant, 0 to 3% slopes, IIIw-2

   This deep, poorly-drained, nearly level soil formed in loamy, material of mixed Coastal Plain sediment. It is mainly found in slight depressions and at the base of low slopes. The water table rises to or near the surface during wet seasons. Thus, the soil is generally wet and poorly suited to crops. It is suited to water-tolerant pasture, grasses, and trees. The erosion hazard is slight.

5. Ha - Hatboro silt loam, 0 to 3% slopes, IVw-1

   This deep, poorly drained, nearly level soil formed in loamy alluvium that washed from upland soils underlain by gneiss, schist, and diabase. It is found on smooth or slightly concave flood plains. Most of the soil is used for pasture or is idle. The hazard of flooding and high water table limit most nonfarm uses of this soil. The erosion hazard is slight.

6. LgA - Lawrenceville silt loam, 0 to 3% slopes, IIw-2

   This deep, moderately well drained, nearly level soil formed in silty windblown deposits underlain by a variety of material weathered chiefly from shale and sandstone. It is found in smooth to concave areas of low relief in the silt-mantled uplands. It is suited to most cultivated crops commonly grown in the area. The seasonal high water table and moderately slow permeability limit most nonfarm uses of this soil. The erosion hazard is slight to high.

7. MaC - Manor loam, 8 to 15% slopes, IIIe-3

   This deep, well-drained, steep soil formed in loamy material weathered from schist and gneiss. It is found on sides of ridges and hills. Almost all of this soil is used for park developments or crops. The erosion hazard is moderate to high.

8. Mh - Marsh, VIIIw-1

   This soil is along shorelines subject to ponding or tidal overflow or is in depressions where runoff collects. The soil material consists mostly of loamy to clayey marine and alluvial deposits. Best suited to wildlife and esthetic uses. Most nonfarm uses are limited by flooding and wetness.

9. PoA - Pope loam, 0 to 5% slopes, IIw-1

This deep, well-drained, nearly level soil formed in loamy alluvial sediment derived from weathered shale, sandstone, quartz, and limestone. Found along the flood plains of the Delaware River, this soil is subject to flooding during periods of intense rain. It is best suited for cultivated crops. The erosion hazard is slight to moderate.

10. PpA - Pope loam, terrace, 3 to 10% slopes, IIe-1

This deep, well drained, gently sloping soil formed in loamy alluvial sediment derived from weathered shale, sandstone, quartz, and limestone. It lies above the present level of flooding. It is well suited to most cultivated crops commonly grown in the area. The erosion hazard is slight to moderate.

11. Ro - Rowland silt loam, 0 to 3% slopes, IIw-1

This deep, well drained to somewhat poorly drained, nearly level soil formed in loamy alluvium that washed from upland soils and is underlain by red and brown shale and sandstone. Located on the flood plains, it has a seasonal high water table. It is suited to most cultivated crops common in the area. The erosion hazard is slight.

12. Ub - Urban land, 0 to 8% slopes

Urban land is in highly developed areas where structures and works cover much of the land making soil identification impractical. The soils and foundation materials are highly variable. This land type can be found on uplands, on terraces on the Coastal Plain, and on the flood plain.

13. Uc - Urban land, Abbottstown complex, 0 to 8% slopes

This complex is about 60% Urban land, 35% Abbottstown silt loam, and 5% included soils. The seasonal high water table and slow permeability limit most nonfarm uses. Most areas of these soils are urban.

14. UdB - Urban land, Chester complex, 0 to 8% slopes

This complex is about 60% Urban land, 35% Chester soil, and 5% included soils. Good drainage and nearly level to gentle slopes make this complex only slightly limited for most nonfarm uses. Most areas are urban.

15. UdC - Urban land, Chester complex, 8 to 15% slopes

This complex is about 60% Urban land, 35% Chester soil, and 5% included soils. Slope limits most nonfarm uses. Most areas are urban.

16. Uh - Urban land, Howell complex, 0 to 15% slopes

This complex is about 60% Urban land, 35% Howell silt loam, and 5% included soils. Slow permeability limits nonfarm uses. Most areas are urban.

17. WoA - Woodstown silt loam, 0 to 5% slopes, IIw-2

This deep, moderately well drained, nearly level soil formed in loamy, old Coastal Plain sediment. It is found at the base of slopes and in depressional areas. The seasonal high water table limits most nonfarm uses. It is suited to most cultivated crops common to the area. The erosion hazard is slight.

APPENDIX E

SITE VISIT DATA/RELATIVE TO BASE MAP

VIOLATION NOTICES

MORRISVILLE BOROUGH ID#1302

Name of Site MORRISVILLE PAVEMENT DESIGN & DATA BCPC#_____ BCCD# 1

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes_____ No X Slight, Moderate, Severe

Date Construction Began 10/80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes X No _____

To control runoff? Yes X No _____

FALLS TOWNSHIP

Name of Site HARTMAN PARK - PENNS GRANT BCPC#_____ BCCD# 2

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes X No_____ Slight, Moderate, Severe

Date Construction Began 8/80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No X

To control runoff? Yes X No _____

FALLS TOWNSHIP

Name of Site PIZZI TRACT BCPC#_____ BCCD# 3

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes_____ No X Slight, Moderate, Severe

Date Construction Began 10/80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No X

To control runoff? Yes _____ No X

BENSALEM TOWNSHIP
Name of Site WINDING BROOK BCPC# 4889 BCCD# 4

Condition Inactive ( ) Active (X) Stable ( )

E & S Problems Yes____ No X Slight, Moderate, Severe

Date Construction Began June/July '80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?
Yes X No ____

To control runoff? Yes X No ____

BENSALEM TOWNSHIP
Name of Site NESHAMINY INTERPLEX BCPC# ____ BCCD# 5

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes____ No X Slight, Moderate, Severe

Date Construction Began 10/78
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?
Yes X No ____

To control runoff? Yes X No ____

BENSALEM TOWNSHIP
Name of Site EVERGREEN TRACT BCPC# 2788 BCCD# 6

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes X No____ Slight, Moderate, Severe-EXTREMELY
3'+ gullies

Date Construction Began 1st section began 1975-Section 1 stabilized. Remaining sections were open and left bare. Large channel (gully) erosion occuring on this site. Needs to be stabilized.
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?
Yes ____ No X

To control runoff? Yes ____ No X

BENSALEM TOWNSHIP

Name of Site TREVOSE OFFICE BUILDING BCPC# 4526 BCCD# 7

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes X No ____ Slight, Moderate, Severe

Date Construction Began ____ (Month) ____ (Year)

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes ____ No X No detention basin installed.

To control runoff? Yes ____ No X

BENSALEM TOWNSHIP

Name of Site WOOD RIVER VILLAGE BCPC# 2539 BCCD# 8

Condition Inactive ( ) Active (X) Stable ( )

E & S Problems Yes X No ____ Slight, Moderate, Severe
Bank and gully

Date Construction Began 2/80 (Month) (Year)

Violation Notices YES

Were measures installed adequate for erosion and sedimentation control?

Yes ____ No X

To control runoff? Yes ____ No X

BENSALEM TOWNSHIP

Name of Site PARCEL K STEAK AND ALE BCPC# 3783 BCCD# 9

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes ____ No X Slight, Moderate, Severe

Date Construction Began 4/77 (Month) (Year)

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes X No ____

To control runoff? Yes X No ____

BENSALEM TOWNSHIP

Name of Site NESHAMINY VILLAGE BCPC# 2539 BCCD# 10

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes____ No X Slight, Moderate, Severe

Date Construction Began 10/80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?

Yes X No ____

To control runoff? Yes X No ____

BENSALEM TOWNSHIP

Name of Site RAMBLERS II BCPC# _____ BCCD# 11

Condition Inactive ( ) Active (X) Stable ( )

E & S Problems Yes X No____ Slight, Moderate, Severe -3' gullies
Swales heavily eroded
Banks heavily eroded
Sediment pollution in the creek

Date Construction Began _____
Month Year

Violation Notices Potential

Were measures installed adequate for erosion and sedimentation control?

Yes ____ No X Jute matting was not installed.

To control runoff? Yes ____ No X

BENSALEM TOWNSHIP

Name of Site EVERGREENE TRACT BCPC# _____ BCCD# 12

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes____ No____ Slight, Moderate, Severe

Date Construction Began _____ Evergreene has final approval. Construction has not started.
Month Year

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes ____ No ____

To control runoff? Yes ____ No ____

BRISTOL TOWNSHIP
Name of Site KINDER CARE BCPC# 3308-A BCCD# 13

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes ____ No X Slight, Moderate, Severe

Date Construction Began _____
Month Year

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes X No ____

To control runoff? Yes X No ____

BRISTOL TOWNSHIP
Name of Site HAROLD J. BROWN BCPC# _____ BCCD# 14

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes ____ No X Slight, Moderate, Severe

Date Construction Began _____
Month Year

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes X No ____

To control runoff? Yes X No ____

BRISTOL TOWNSHIP
Name of Site FAIRBRIDGE WEST BCPC# _____ BCCD# 15

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes ____ No X Slight, Moderate, Severe

Date Construction Began _____
Month Year

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes X No ____

To control runoff? Yes X No ____

BRISTOL TOWNSHIP
Name of Site HEADLEY MANOR BCPC# 4347 BCCD# 16

Condition Inactive ( ) Active ( ) Stable (X)

E & S Problems Yes ____ No X Slight, Moderate, Severe

Date Construction Began 10/80
Month Year

Violation Notices NO

Were measures installed adequate for erosion and sedimentation control?
Yes X No ____

To control runoff? Yes X No ____

Name of Site ____ BCPC# ____ BCCD# ____

Condition Inactive ( ) Active ( ) Stable ( )

E & S Problems Yes ____ No ____ Slight, Moderate, Severe

Date Construction Began ____
Month Year

Violation Notices ____

Were measures installed adequate for erosion and sedimentation control?
Yes ____ No ____

To control runoff? Yes ____ No ____

Name of Site ____ BCPC# ____ BCCD# ____

Condition Inactive ( ) Active ( ) Stable ( )

E & S Problems Yes ____ No ____ Slight, Moderate, Severe

Date Construction Began ____
Month Year

Violation Notices ____

Were measures installed adequate for erosion and sedimentation control?
Yes ____ No ____

To control runoff? Yes ____ No ____

MORRISVILLE BOROUGH

Name of Site MORRISVILLE BORO SCHOOL DISTRICT BCPC# _____ BCCD# A

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes_____ No_____ Slight, Moderate, Severe

Date Construction Began N/A (N/A)
Month Year

Violation Notices _____ NEVER BUILT

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

MORRISVILLE BOROUGH

Name of Site MELVIN COURT BCPC# _____ BCCD# B

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes____ No_____ Slight, Moderate, Severe

Date Construction Began N/A (N/A)
Month Year

Violation Notices NO NEVER BUILT

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

BRISTOL TOWNSHIP

Name of Site ORCHARD RUN BCPC# 4766 BCCD# C

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes_____ No_____ Slight, Moderate, Severe

Date Construction Began _____ Developer Jack Blumberg has not submitted final plans.
Month Year

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

BRISTOL TOWNSHIP

Name of Site BRISTOL NEWSPAPER RECYCLING BCPC#_____ BCCD# D

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes_____ No_____ Slight, Moderate, Severe

Date Construction Began No construction
Month Year

The plan never was realized.
NO EARTH WAS DISTURBED.
NO GROUND COVER ESTABLISHED.

Violation Notices No

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

BRISTOL TOWNSHIP

Name of Site EDGELY PLACE BCPC# 1555-A BCCD# E

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes____ No_____ Slight, Moderate, Severe

Date Construction Began _____
Month Year

Final plan approved November 12, 1980. Construction has not yet begun. This project was never built. There is an on-going controversy concerning a wetland. Edgley Place is proposed to be constructed on this wetland.

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

BRISTOL TOWNSHIP

Name of Site BRISTOL PARK TWINS BCPC#_____ BCCD# F

Condition Inactive (X) Active ( ) Stable ( )

E & S Problems Yes_____ No_____ Slight, Moderate, Severe

Date Construction Began _____
Month Year

This project was never realized. The tax parcel is still vacant.

Violation Notices _____

Were measures installed adequate for erosion and sedimentation control?

Yes _____ No _____

To control runoff? Yes _____ No _____

Violation Notices Issued by
Bucks County Health Department
(1978, 1979, 1980)
Re: Erosion and Sedimentation Control

1.	Galilee Village Inc. 17 Penn Valley Road Levittown, PA 19054	(Falls Township) May 5, 1978 Citizen Complaint
2.	Wood River Village Altman-Korman Joint Venture Two Neshaminy Interplex Trevose, PA	(Bensalem Township) February 7, 1980 Citizen Complaint
3.	Shafer Middle School Bensalem, PA	(Bensalem Township) May 24, 1978 Citizen Complaint

APPENDIX E

County of Bucks

DEPARTMENT OF HEALTH

Neshaminy Manor Center, Doylestown, Pa. 18901 - 215-343-2800

FIELD OFFICES
410 Bath Road, Bristol, Pa. 19007 - 788-0491
515 W. End Blvd., Quakertown, Pa. 18951 - 536-6500

Edmund K. Lindemuth, M.D., M.P.H.
Director

June 12, 1978

CERTIFIED MAIL

Mr. G. Rosen, President
Galilee Village, Inc.
17 Penn Valley Road
Levittown, Pennsylvania 19054

SUBJECT: Violation Notice
Discharge of Silt-laden Water to
State Waters, Galilee Village
Falls Township, Bucks County

Dear Mr. Rosen:

An inspection at the subject location on June 8, 1978, by Peter G. Noll, Environmental Protection Specialist with this Department, found that the final stabilization of the grounds of the subject apartment complex has not been done. It was observed that severe soil erosion is reaching the stormwater drains, hence to an unnamed tributary of Rock Run Creek.

Failure to completely implement the soil erosion control plan for the project and the discharge of silt-laden water to State Waters are violations of Chapter 102, Erosion Control (copy enclosed) and the Pennsylvania Clean Streams Law and prompt corrective action is required.

Please notify us in writing within seven (7) days of your receipt of this letter of the measures taken to stabilize the site and the date by which compliance was obtained.

Very truly yours,

Albert W. Wills

Albert W. Wills, P. E., Chief
Division of Environmental Engineering

AWW/nk
cc: See attached

Certified Mail
Mr. G. Rosen, President
Galilee Village, Inc.

June 12, 1978

cc: Ronald E. Vaughn Associates
Mr. Leonard Elkins
Singer-Agnes Construction Co.
Regional Sanitary Engineer
Central Files - DER

APPENDIX E

BUCKS COUNTY CONSERVATION DISTRICT

BOX 16, 4259 SWAMP ROAD
DOYLESTOWN, PENNSYLVANIA 18901
215 / 348-1166

July 25, 1980

Pickering, Corts and Summerson, Inc.
South State Road
Newtown, Pa. 18940

Subject: Wood River Village
Bensalem Township, Bucks County

Gentlemen:

This correspondence pertains to the erosion, sedimentation control and stormwater management plan for the captioned project. The Bucks County Conservation District's current review dated June 16, 1980 indicates the plan is inadequate. The reasons are included in the review.

The plan, as submitted, was conceptually appropriate. However, there were areas of concern which were not resolved. Due to the extent of development of the site, these concerns are not paramount to the stablization of the site. It would not be advisable to implement changes in the plan at this time.

If further assistance is needed or additional information desired feel free to contact me at 348-1166.

Sincerely yours,

Lonnie Manai
Soil Conservationist

CC: Bensalem Township
BCPC
SCS
File

ARTHUR LEA STABLER & ASSOCIATES
ARCHITECTS
637A FREDERICK STREET, HANOVER, PENNSYLVANIA 17331

June 13, 1978

Re: Robert K. Shafer Middle School

At 10 o'clock on Monday morning, June 12, 1978, a meeting was held at the above captioned job site with the following people present:

Peter G. Noll -- County of Bucks, Department of Health
Ruth Piscitelli -- County of Bucks, Conservation District
John Deacon, William Ricker -- Bensalem Township School District, Owner
James Darrah, Win Miller -- William Spencer Erwin, Associates, Inc., Engineers
William Whalen, William Kalmes, S.T.C. Construction Co., General Contractor
Arthur L. Stabler -- Arthur Lea Stabler & Associates, Architect

This meeting was requested by Mr. Noll to review progress to date on the Soil Erosion and Sedimentation Control Program for this project.

Minimal site area has been disturbed, primarily where the building is to go and the temporary driveway. An earth berm has been placed around the building site as indicated on the drawings but no stone spillways are installed. Mr. Noll has requested that these two stone spillways be installed. A statement was given to Mr. Deacon by Mr. Noll that this work was not in accordance with plans and that other proposed work has not been done. Mr. Deacon indicated that it was the intent of the School Board to follow the plans and meet with Mr. Noll to satisfy him if and when any proposed modifications are to be made.

A letter is to be sent to the Township informing them that the School Board would do what is necessary to fullfill the requirements of the Department of Environmental Resources in reducing the amount of erosion and sedimentation leaving the site.

Arthur Lea Stabler, AIA

ALS/rm

Copy to: Peter G. Noll
Ruth Piscitelli
John Deacon
William Ricker
William Spencer Erwin Associates
S.T.C. Construction Co.
File

APPENDIX F

LIST OF PUBLICATIONS USED IN LAND DEVELOPMENT REVIEWS

APPENDIX F

BUCKS COUNTY CONSERVATION DISTRICT

BOX 16, 4259 SWAMP ROAD
DOYLESTOWN, PENNSYLVANIA 18901
215 / 348-1166

MEMORANDUM

TO: John A. Thomas, Executive Assistant

FROM: Lonnie J. Manai, Soil Conservationist

SUBJECT: Publications Used in Land Development Reviews

DATE: January 23, 1981

Mr. Thomas, as you have requested per our conversation of January 22, 1981, the following is a list of publications the Bucks County Conservation District utilizes in the review of erosion, sedimentation control and stormwater management plans:

PUBLICATION	AGENCY
1 - Standards & Specifications Technical Guide - Section IV	USDA - SCS
2 - Engineering Field Manual	USDA - SCS
3 - Standards & Specifications for Soil Erosion and Sedimentation Control in Developing Areas	USDA - SCS - Maryland
4 - Directory of Soil Erosion and Sedimentation Control Practices	PA - DER
5 - Urban Hydrology for Small Watersheds - T.R. #55	USDA - SCS - Engineering Division
6 - Soil Erosion and Sedimentation Control Manual	PA - DER
7 - Runoff Calculations	PA - DER, Bureau of Soil & Water Conservation
8 - Michigan Soil Erosion and Sedimentation Control Guidebook	Division of Land Resource Programs, Department of Natural Resources
9 - Agronomy Guide	PA State University Extension Service

LJM/msj

ACKNOWLEDGEMENTS

The study of the Bucks County Coastal Zone Management Area has been prepared by the Bucks County Conservation District for the Pennsylvania Department of Environmental Resources, Bureau of Soil and Water Conservation. Staff members directly responsible for the final report's contents were:

John A. Thomas, Executive Assistant
Joan M. Cummings, Soil Conservationist
Lonnie J. Manai, Soil Conservationist

Special thanks are to be extended to: Bensalem Township Manager, Natalie A. Strange; Bensalem Township Engineer, Thomas W. Tams; Bristol Borough Manager, Fidel Esposito; Bristol Township Manager, N. Michael Merkl; Assistant to Falls Township Manager, Sue Patton; Morrisville Zoning Officer/ Building Inspector, Harry F. Falkenstein; and Tullytown Borough Engineer, Joseph Caruso. District Secretary Martha Jameson should also be recognized for her numerous hours of typing and retyping which resulted in the final revision prior to the published report.

The District is also appreciative of the many contributions from the Bucks County Planning Commission.